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| 1. Find the period and amplitude.  ​  *y* = –7 sin *x*  ​   |  |  |  | | --- | --- | --- | |  | a. | Period: *π*; Amplitude: –7 | |  | b. | Period: *π*; Amplitude: | |  | c. | Period: 2*π*; Amplitude: 7 | |  | d. | Period: 2*π*; Amplitude: | |  | e. | Period: 2*π*; Amplitude: 1 |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.11 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/19/2014 9:00 AM | |

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| 2. Find the period and amplitude.  ​  *y* = 7 sin 40*x*  ​   |  |  |  | | --- | --- | --- | |  | a. | Period: *π*; Amplitude: –7 | |  | b. | Period: *π*; Amplitude: | |  | c. | Period: ; Amplitude: | |  | d. | Period: 2*π*; Amplitude: 1 | |  | e. | Period: ; Amplitude: 7 |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.13 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/15/2015 8:20 AM | |

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| 3. Find the period and amplitude.  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | Period: 2*π*; Amplitude: 1 | |  | b. | Period: ; Amplitude: | |  | c. | Period: *π*; Amplitude: | |  | d. | Period: *π*; Amplitude: 5 | |  | e. | Period: ; Amplitude: |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.15 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/15/2015 8:39 AM | |

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| 4. Find the period and amplitude.  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | Period: 1; Amplitude: | |  | b. | Period: *π*; Amplitude: | |  | c. | Period: 2*π*; Amplitude: 1 | |  | d. | Period: ; Amplitude: | |  | e. | Period: *π*; Amplitude: 5 |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.17 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/19/2014 10:02 AM | |

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| 5. Find the relationship between the graphs of *f* and *g*. Consider amplitude, period, and shifts.  ​  *f*(*x*) = sin *x*  *g*(*x*) = sin (*x* – 5*π*)  ​   |  |  |  | | --- | --- | --- | |  | a. | *g* is a shift of *f* 2*π* units downwards. | |  | b. | *g*is a shift of *f* *π* units upwards. | |  | c. | *g* is a shift of *f*  units to the right. | |  | d. | *g* is a shift of *f* 5*π* units to the left. | |  | e. | *g* is a shift of *f* 5*π* units to the right. |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.19 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/19/2014 10:13 AM | |

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| 6. Find the relationship between the graphs of *f* and *g*. Consider amplitude, period, and shifts.  ​  *f*(*x*) = cos 2*x*  *g*(*x*) = –cos 2*x*  ​   |  |  |  | | --- | --- | --- | |  | a. | *g* is a shift of *f* *π* units to the left. | |  | b. | *g* is a reflection of *f* in the *x*-axis. | |  | c. | *g* is a shift of *f* *π* units to the right. | |  | d. | *g* is a shift of *f* 2 units to the upward. | |  | e. | *g* is a reflection of *f* in the *y*-axis. |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.21 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/19/2014 10:46 AM | |

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| 7. Find the relationship between the graphs of *f* and *g*. Consider amplitude, period, and shifts.  ​  *f*(*x*) = cos *x*  *g*(*x*) = cos 2*x*  ​   |  |  |  | | --- | --- | --- | |  | a. | The period of *g* is 2 times the period of *f*. | |  | b. | *g* is a reflection of *f* in the *y*-axis. | |  | c. | The period of *f* is 2 times the period of *g*. | |  | d. | *f* is a reflection of *g* in the *x*-axis. | |  | e. | *g* is a shift of *f* *π* units to the right. |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.23 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/19/2014 10:55 AM | |

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| 8. Find the relationship between the graphs of *f* and *g*. Consider amplitude, period, and shifts.  ​  *f*(*x*) = sin 7*x*  *g*(*x*) = 5 + sin 7*x*  ​   |  |  |  | | --- | --- | --- | |  | a. | The period of *g* is 5 times the period of *f*. | |  | b. | *g* is a shift of *f* 7 units downward. | |  | c. | *g* is a shift of *f* 5 units upward. | |  | d. | *g* is a shift of *f* 5 units downward. | |  | e. | *f* is a reflection of *g* in the *x*-axis. |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.25 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/19/2014 11:00 AM | |

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| 9. Find the relationship between the graphs of *f* and *g*. Consider amplitude, period, and shifts.  ​  *f*(*x*) = cos 6*x*  *g*(*x*) = – 4 + cos 6*x*  ​   |  |  |  | | --- | --- | --- | |  | a. | *g* is a shift of  *f* 4 units upward. | |  | b. | *g* is a shift of  f 4 units downward. | |  | c. | The period of *g* is 4 times the period of *f*. | |  | d. | *f* is a reflection of *g* in the *x*-axis. | |  | e. | *g* is a shift of  *f* 6 units downward. |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.26 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/15/2015 8:47 AM | |

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| 10. Find the relationship between the graphs of *f* and *g*. Consider amplitude, period, and shifts.  ​  *f*(*x*) = sin *x*  *g*(*x*) = sin 5*x*  ​   |  |  |  | | --- | --- | --- | |  | a. | The period of *g* is 5 times the period of *f*. | |  | b. | *g* is a shift of *f* *π* units to the right. | |  | c. | *g* is a reflection of *f* in the *y*-axis. | |  | d. | The period of *f* is 5 times the period of *g*. | |  | e. | *f* is a reflection of *g* in the *x*-axis. |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.24 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/22/2014 5:42 AM | |

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| 11. Find the relationship between the graphs of *f* and *g*. Consider amplitude, period, and shifts.​  *f*(*x*) = sin 6*x*  *g*(*x*) = sin (– 6*x*)​  ​   |  |  |  | | --- | --- | --- | |  | a. | *g* is a shift of *f* *π* units to the left. | |  | b. | *g* is a shift of *f π* units to the right. | |  | c. | *g* is a shift of *f* 6 units to the upward. | |  | d. | *g* is a reflection of *f* in the *y*-axis. | |  | e. | *g* is a reflection of *f* in the *x*-axis. |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.22 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/15/2015 8:50 AM | |

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| 12. Select the graph of the function. (Include two full periods.)  ​  *y* = sin 2*x*  ​   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. |  | b. |  | |  | c. |  | d. |  | |  | e. |  |  |  |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.44 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/22/2014 5:58 AM | |

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| 13. Select the graph of the function. (Include two full periods.)  ​  ​   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. |  | b. |  | |  | c. |  | d. |  | |  | e. |  |  |  |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.43 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/22/2014 6:32 AM | |

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| 14. Select the graph of the function. (Include two full periods.)  ​  ​   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. |  | b. | ​ | |  | c. |  | d. |  | |  | e. |  |  |  |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.47 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/22/2014 7:01 AM | |

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| 15. Select the graph of the function. (Include two full periods.)  ​  ​   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. |  | b. |  | |  | c. |  | d. |  | |  | e. |  |  |  |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.48 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/24/2014 8:01 AM | |

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| 16. Select the graph of the function. (Include two full periods.)  ​  ​   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. |  | b. |  | |  | c. |  | d. |  | |  | e. |  |  |  |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.53 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/22/2014 7:58 AM | |

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| 17. Select the graph of the function. (Include two full periods.)  ​  ​   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. |  | b. |  | |  | c. |  | d. |  | |  | e. |  |  |  |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.55 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/24/2014 7:02 AM | |

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| 18. Function g is related to a parent function *f*(*x*) = sin (*x*).  ​  *g*(*x*) = sin (2*x* – *π*)  ​  Describe the sequence of transformations from *f* to *g*.  ​   |  |  |  | | --- | --- | --- | |  | a. | *g*(*x*) is obtained by a horizontal shrink of 2, and one cycle of *g*(*x*) corresponds to the interval . | |  | b. | *g*(*x*) is obtained by a vertical shrink of 2, and one cycle of *g*(*x*) corresponds to the interval . | |  | c. | *g*(*x*) is obtained by a vertical shrink of 2, and one cycle of *g*(*x*) corresponds to the interval [*π*, 3*π*]. | |  | d. | *f*(*x*) is obtained by a horizontal shrink of 2, and one cycle of *f*(*x*) corresponds to the interval [*π*, 3*π*]. | |  | e. | *f*(*x*) is obtained by a horizontal shrink of 2, and one cycle of *f*(*x*) corresponds to the interval . |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.61a | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/15/2015 8:51 AM | |

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| 19. Function *g* is related to a parent function *f*(*x*) = cos (*x*).  ​  *g*(*x*) = cos (8*x* – *π*) + 7  ​  Describe the sequence of transformation from *f* to *g*.  ​   |  |  |  | | --- | --- | --- | |  | a. | One cycle of *g*(*x*) corresponds to the interval [*π*, 3*π*] and *g*(*x*) is obtained by shifting *f*(*x*) downward 7 units. | |  | b. | One cycle of *g*(*x*) corresponds to the interval  and *g*(*x*) is obtained by shifting *f*(*x*) upward 7 units. | |  | c. | One cycle of *f*(*x*) corresponds to the interval  and *g*(*x*) is obtained by shifting *g*(*x*) upward 7 units. | |  | d. | One cycle of *g*(*x*) corresponds to the interval  and *g*(*x*) is obtained by shifting *f*(*x*) downward 7 units. | |  | e. | One cycle of *g*(*x*) corresponds to the interval [*π*, 3*π*] and *g*(*x*) is obtained by shifting *f*(*x*) upward 7 units. |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.63a | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/15/2015 8:57 AM | |

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| 20. Function g is related to a parent function *f*(*x*) = sin (*x*).  ​  *g*(*x*) = sin (4*x* – *π*)  ​  Use function notation to write *g* in terms of *f*.  ​   |  |  |  | | --- | --- | --- | |  | a. | *g*(*x*) = *f*(*π* – 3*x*) | |  | b. |  | |  | c. | *g*(*x*) = *f*(4*x* – *π*) | |  | d. |  | |  | e. |  |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.61c | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/15/2015 8:59 AM | |

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| 21. Function *g* is related to a parent function *f*(*x*) = cos (*x*).  ​  *g*(*x*) = cos (6*x* – *π*) + 7  ​  Use function notation to write *g* in terms of *f.*  ​   |  |  |  | | --- | --- | --- | |  | a. | *g*(*x*) = *f*(6*x* + *π*) + 12 | |  | b. | *g*(*x*) = *f*(6*x* + *π*) + 8 | |  | c. | *g*(*x*) = *f*(6*x* – *π*) – 10 | |  | d. | *g*(*x*) = *f*(6*x* – *π*) + 7 | |  | e. | *g*(*x*) = *f*(6*x* + *π*) – 14 |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.63c | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/15/2015 9:00 AM | |

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| 22. Function *g* is related to a parent function *f*(*x*) = sin (*x*).  ​  *g*(*x*) = 4sin (4*x* – *π*) – 3  ​  Describe the sequence of transformation from *f* to *g*.  ​   |  |  |  | | --- | --- | --- | |  | a. | One cycle of *g*(*x*) is . *g*(*x*) is also shifted down 4 units and has an amplitude of 4. | |  | b. | One cycle of *f*(*x*) is . *f*(*x*) is also shifted down 3 units and has an amplitude of 4. | |  | c. | One cycle of *g*(*x*) is . *g*(*x*) is also shifted down 3 units and has an amplitude of 4. | |  | d. | One cycle of *g*(*x*) is . *g*(*x*) is also shifted up 3 units and has an amplitude of 4. | |  | e. | One cycle of *g*(*x*) is [*π*, 3*π*]. *g*(*x*) is also shifted down 3 units and has an amplitude of 3. |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.65a | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/15/2015 9:01 AM | |

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| 23. Function *g* is related to a parent function *f*(*x*) = sin(*x*).  ​  *g*(*x*) = 4 sin (4*x* – *π*) – 3  ​  Use function notation to write *g* in terms of *f*.  ​   |  |  |  | | --- | --- | --- | |  | a. | *g*(*x*) = 4*f*(4*x* – *π*) – 6 | |  | b. | *g*(*x*) = 3*f*(4*x* – *π*) – 10 | |  | c. | *g*(*x*) = 3*f*(4*x* – *π*) + 4 | |  | d. | *g*(*x*) = 4*f*(4*x* + *π*) – 8 | |  | e. | *g*(*x*) = 4*f*(4*x* – *π*) – 3 |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.65c | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/15/2015 9:02 AM | |

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| 24. Use a graphing utility to select the graph of the function. Include two full periods.  ​  *y* = –2 sin (2*x* + *π*)  ​   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. |  | b. |  | |  | c. |  | d. |  | |  | e. |  |  |  |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.67 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/24/2014 9:51 AM | |

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| 25. Use a graphing utility to select the graph of the function. Include two full periods.  ​   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. |  | b. |  | |  | c. | ​ | d. |  | |  | e. |  |  |  |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.68 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/18/2015 9:35 AM | |

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| 26. Use a graphing utility to select the graph of the function. Include two full periods.  ​  ​   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | ​ | b. |  | |  | c. |  | d. |  | |  | e. |  |  |  |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.72 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/28/2014 10:12 AM | |

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| 27. Write an equation for the function that is described by the given characteristics.  ​  A sine curve with a period of *π*, an amplitude of 4, a right phase shift of , and a vertical translation up 7 units.  ​   |  |  |  | | --- | --- | --- | |  | a. | *y* = 10 + 4 sin (2*x* + *π*) | |  | b. | *y* = 7 + 4 sin (2*x* – *π*) | |  | c. | ​*y* = 9 – 4 sin (2*x* + *π*) | |  | d. | *y* = 8 + 4 sin (– 2*x* – *π*) | |  | e. | *y* = 11 + 7 sin (2*x* – *π*) |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.83 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/27/2014 10:14 AM | |

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| 28. Write an equation for the function that is described by the given characteristics.  ​  A sine curve with a period of 4*π*, an amplitude of 4, a left phase shift of , and a vertical translation down 5 units.  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. |  | |  | d. |  | |  | e. |  |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.84 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/27/2014 10:19 AM | |

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| 29. Write an equation for the function that is described by the given characteristics.  ​  A cosine curve with a period of *π*, an amplitude of 6, a left phase shift of *π*, and a vertical translation down  units.  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. |  | |  | d. |  | |  | e. |  |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.85 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/27/2014 10:26 AM | |

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| 30. Write an equation for the function that is described by the given characteristics.  ​  A cosine curve with a period of 4*π*, an amplitude of 7, a right phase shift of , and a vertical translation up 2 units.  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. |  | |  | d. |  | |  | e. |  |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.86 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/27/2014 10:39 AM | |

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| 31. For a person at rest, the velocity *v* (in liters per second) of airflow during a respiratory cycle (the time from the beginning of one breath to the beginning of the next) is given by  ​  ,  ​  where *t* is the time (in seconds).  (Inhalation occurs when *v* > 0, and exhalation occurs when *v* < 0.)  ​  Find the time for one full respiratory cycle.  ​   |  |  |  | | --- | --- | --- | |  | a. | 7 sec | |  | b. | 9 sec | |  | c. | 3 sec | |  | d. | 8 sec | |  | e. | 6 sec |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.87a | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/27/2014 10:43 AM | |

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| 32. For a person at rest, the velocity *v* (in liters per second) of airflow during a respiratory cycle (the time from the beginning of one breath to the beginning of the next) is given by  ​  ,  ​  where *t* is the time (in seconds).  (Inhalation occurs when *v* > 0 and exhalation occurs when *v* < 0.)  ​  Find the number of cycles per minute.  ​   |  |  |  | | --- | --- | --- | |  | a. | 14 cycles/min | |  | b. | 11 cycles/min | |  | c. | 10 cycles/min | |  | d. | 15 cycles/min | |  | e. | 12 cycles/min |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.87b | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/27/2014 10:50 AM | |

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| 33. For a person at rest, the velocity *v* (in liters per second) of airflow during a respiratory cycle (the time from the beginning of one breath to the beginning of the next) is given by  ​  ,  ​  where *t* is the time (in seconds).  (Inhalation occurs when *v* > 0 and exhalation occurs when *v* < 0.)  Select the graph of this velocity function.  ​   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. |  | b. |  | |  | c. |  | d. |  | |  | e. |  |  |  |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.87c | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/28/2014 10:27 AM | |

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| 34. After exercising for a few minutes, a person has a respiratory cycle for which the velocity of airflow is approximated by  ​  ,  where *t* is the time (in seconds).  (Inhalation occurs when *v* > 0 and exhalation occurs when *v* < 0.)  ​  Find the time for one full respiratory cycle.​  ​   |  |  |  | | --- | --- | --- | |  | a. | 6 sec | |  | b. | 2 sec | |  | c. | 7 sec | |  | d. | 3 sec | |  | e. | 8 sec |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.88a | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/15/2015 9:12 AM | |

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| 35. After exercising for a few minutes, a person has a respiratory cycle for which the velocity of airflow is approximated by  ​  ,  ​  where *t* is the time (in seconds).  (Inhalation occurs when *v* > 0 and exhalation occurs when *v* < 0.)  ​  Find the number of cycles per minute.  ​   |  |  |  | | --- | --- | --- | |  | a. | 12 cycles/min | |  | b. | 10 cycles/min | |  | c. | 15 cycles/min | |  | d. | 13 cycles/min | |  | e. | 11 cycles/min |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.88b | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/28/2014 7:15 AM | |

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| 36. After exercising for a few minutes, a person has a respiratory cycle for which the velocity of airflow is approximated by  ​  ,  ​  where *t* is the time (in seconds).  (Inhalation occurs when *v* > 0 and exhalation occurs when *v* < 0.)  Select the graph of this velocity function.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. |  | b. |  | |  | c. |  | d. |  | |  | e. | ​ |  |  |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.88c | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/28/2014 10:30 AM | |

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| 37. When tuning a piano, a technician strikes a tuning fork for the A above middle C and sets up a wave motion that can be approximated by  ​  *y* = 0.001 sin 880*πt*,  ​  where *t* is the time (in seconds).  ​  What is the period of the function?  ​   |  |  |  | | --- | --- | --- | |  | a. | sec | |  | b. | 440 sec | |  | c. | sec | |  | d. | 880 sec | |  | e. | 88 sec |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.91a | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/15/2015 9:33 AM | |

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| 38. When tuning a piano, a technician strikes a tuning fork for the A above middle C and sets up a wave motion that can be approximated by  ​  *y* = 0.001 sin 850*πt*,  ​  where *t* is the time (in seconds).  ​  The frequency is given by *f* = 1 / *p*. What is the frequency of the note?  ​   |  |  |  | | --- | --- | --- | |  | a. | 85 cycles/sec | |  | b. | cycles/sec | |  | c. | cycles/sec | |  | d. | 850 cycles/sec | |  | e. | 425 cycles/sec |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.91b | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/15/2015 9:34 AM | |

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| 39. The daily consumption *C* (in gallons) of diesel fuel on a farm is modeled by  ​  ,  ​  where *t* is the time (in days), with *t* = 1 corresponding to January 1.  What is the period of the model?  ​   |  |  |  | | --- | --- | --- | |  | a. | 31 days | |  | b. | 22 days | |  | c. | 183 days | |  | d. | 365 days | |  | e. | 30 days |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.93a | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/28/2014 9:34 AM | |

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| 40. The daily consumption *C* (in gallons) of diesel fuel on a farm is modeled by  ​  ,  ​  where *t* is the time (in days), with *t* = 1 corresponding to January 1.  What is the average daily fuel consumption?  ​   |  |  |  | | --- | --- | --- | |  | a. | 365 gal. | |  | b. | 21.6 gal. | |  | c. | 30 gal. | |  | d. | 10.2 gal. | |  | e. | 30.4 gal. |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.93b | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/28/2014 9:35 AM | |

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| 41. The daily consumption *C* (in gallons) of diesel fuel on a farm is modeled by  ​  ,  ​  where *t* is the time (in days), with *t* = 1 corresponding to January 1.  Use a graphing utility to select the graph of the model.  ​   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. |  | b. |  | |  | c. |  | d. |  | |  | e. |  |  |  |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.93c | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/28/2014 11:01 AM | |

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| 42. ​Determine the period and amplitude of the following function  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | ​Period: 10; Amplitude: 6 | |  | b. | ​Period: ; Amplitude: 3 | |  | c. | ​Period: 8; Amplitude: 4 | |  | d. | ​Period: ; Amplitude: 3 | |  | e. | ​Period: 5; Amplitude: 2 |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.6 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/18/2015 6:23 AM | |

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| 43. ​Determine the period and amplitude of the following function  ​    ​   |  |  |  | | --- | --- | --- | |  | a. | ​Period: 16; Amplitude: 10 | |  | b. | ​Period: ; Amplitude: 5 | |  | c. | ​Period: 5; Amplitude: 6 | |  | d. | ​Period: ; Amplitude: 5 | |  | e. | ​Period: 8; Amplitude: 4 |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 5/18/2015 4:40 AM | | *DATE MODIFIED:* | 5/18/2015 9:39 AM | |

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| 44. Describe the relationship between the graphs of  *f* and *g*. Consider amplitude, period, and shifts.  ​  *f*(*x*) = cos *x*  *g*(*x*) = cos (5*x*​ – 3)   |  |  |  | | --- | --- | --- | |  | a. | The period of *g*(*x*) is five times the period of *f*(*x*).  Graph of *g*(*x*) is shifted upward 3 unit(s) relative to the graph of *f*(*x*). | |  | b. | The amplitude of *g*(*x*) is five times the amplitude of *f*(*x*).  Graph of *g*(*x*) is shifted downward 3 unit(s) relative to the graph of *f*(*x*). | |  | c. | The amplitude of *g*(*x*) is five times the amplitude of *f*(*x*).  Graph of *g*(*x*) is shifted upward 3 unit(s) relative to the graph of *f*(*x*). | |  | d. | The period of *g*(*x*) is three times the period of *f*(*x*).  Graph of *g*(*x*) is shifted downward 5 unit(s) relative to the graph of *f*(*x*). | |  | e. | The period of *f*(*x*) is five times the period of *g*(*x*).  Graph of *g*(*x*) is shifted downward 3 unit(s) relative to the graph of *f*(*x*). |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.20 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/18/2015 4:14 AM | |

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| 45. ​Sketch the graph of the function below, being sure to include at least two full periods.  ​  *​y = 2 cos*​( x – )  ​  ​   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | ​ | b. | ​ | |  | c. | ​ | d. | ​ | |  | e. | ​ |  |  |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.52 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/18/2015 9:50 AM | |

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| 46. Sketch the graph of the function below, being sure to include at least two full periods.  ​  y = – cos(x+)  ​   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. | ​ | b. | ​ | |  | c. | ​ | d. | ​ | |  | e. | ​ |  |  |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.49 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/18/2015 9:55 AM | |

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| 47. Use a graphing utility to graph the function below. Be sure to include at least two full periods.  *y* = 4 sin (*x*– 5*π*) + 1   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. |  | b. | ​ | |  | c. | ​ | d. | ​ | |  | e. | ​ |  |  |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.69 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/18/2015 3:50 AM | |

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| 48. Use a graphing utility to graph the function below. Be sure to include at least two full periods.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. |  | b. |  | |  | c. |  | d. |  | |  | e. |  |  |  |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.70 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/18/2015 10:03 AM | |

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| 49. Find *a* and *d* for the function *f*(*x*) = *a* sin *x* + *d* such that the graph of *f*(*x*) matches the graph below.   |  |  |  | | --- | --- | --- | |  | a. | *a* = 2; *d* = –1 | |  | b. | *a* = 4; *d* = 1 | |  | c. | *a* = –2; *d* = 1 | |  | d. | *a* = 2; *d* = 2 | |  | e. | *a* = 4; *d* = –3 |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.74 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 11/29/2014 6:36 AM | |

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| 50. Find *a*, *b,* and *c* for the function *f*(*x*) = *a* cos (*bx* – *c*) such that the graph of *f*(*x*) matches the graph below.   |  |  |  | | --- | --- | --- | |  | a. | *a* = –2; *b* = –1; c= | |  | b. | *a* = 4; *b* = 1; *c* = *π* | |  | c. | *a* = 1; *b* = 2; *c* = –1 | |  | d. | *a* = 2; *b* = 1; *c* = –*π* | |  | e. | *a* = 2; *b* = 1; *c* = *π* |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *REFERENCES:* | 6.4.77 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/15/2015 10:39 AM | |

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| 51. Determine which of the graphs below represents the following function  y=|*x*|sin *x*  ​   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. |  | b. |  | |  | c. |  | d. |  | |  | e. |  |  |  |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 6/10/2014 4:23 PM | | *DATE MODIFIED:* | 5/15/2015 10:13 AM | |