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| 1. Determine whether  approaches  or  as *x* approaches  from the left and from the right by completing the tables below.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | –3.5 | –3.1 | –3.01 | –3.001 | |  |  |  |  |  |   ​   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | –2.999 | –2.99 | –2.9 | –2.5 | |  |  |  |  |  |   ​   |  |  |  | | --- | --- | --- | |  | a. | , | |  | b. | , | |  | c. | ​, | |  | d. | ​, |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | Section 1.5 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CALC079 - Evaluate an infinite limit from a table of values | | *OTHER:* | Skill | | *DATE CREATED:* | 1/11/2017 9:49 AM | | *DATE MODIFIED:* | 1/11/2017 9:49 AM | |

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| 2. Find all the vertical asymptotes (if any) of the graph of the function .  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. |  | |  | d. |  | |  | e. | no vertical asymptotes |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *DIFFICULTY:* | Easy | | *REFERENCES:* | Section 1.5 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CALC080 - Identify the vertical asymptotes (if any) of the graph of a function | | *OTHER:* | Skill | | *DATE CREATED:* | 1/11/2017 9:49 AM | | *DATE MODIFIED:* | 1/11/2017 9:49 AM | |

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| 3. Find the vertical asymptotes (if any) of the function .  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. | ​ | |  | d. |  | |  | e. |  |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | Section 1.5 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CALC080 - Identify the vertical asymptotes (if any) of the graph of a function | | *OTHER:* | Skill | | *DATE CREATED:* | 1/11/2017 9:49 AM | | *DATE MODIFIED:* | 1/11/2017 9:49 AM | |

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| 4. Find all the vertical asymptotes (if any) of the graph of the function .  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. |  | |  | d. | , | |  | e. | no vertical asymptotes |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | Section 1.5 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CALC080 - Identify the vertical asymptotes (if any) of the graph of a function | | *OTHER:* | Skill | | *DATE CREATED:* | 1/11/2017 9:49 AM | | *DATE MODIFIED:* | 1/11/2017 9:49 AM | |

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| 5. Find all the vertical asymptotes (if any) of the graph of the function .  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. |  | |  | d. |  | |  | e. | no vertical asymptotes |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | Section 1.5 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CALC080 - Identify the vertical asymptotes (if any) of the graph of a function | | *OTHER:* | Skill | | *DATE CREATED:* | 1/11/2017 9:49 AM | | *DATE MODIFIED:* | 1/11/2017 9:49 AM | |

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| 6. Find all vertical asymptotes (if any) of the function .  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. |  | |  | d. |  | |  | e. |  |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | Section 1.5 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CALC080 - Identify the vertical asymptotes (if any) of the graph of a function | | *OTHER:* | Skill | | *DATE CREATED:* | 1/11/2017 9:49 AM | | *DATE MODIFIED:* | 1/11/2017 9:49 AM | |

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| 7. Find the vertical asymptotes (if any) of the function .  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. |  | |  | d. |  | |  | e. | no vertical asymptotes |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | Section 1.5 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CALC080 - Identify the vertical asymptotes (if any) of the graph of a function | | *OTHER:* | Skill | | *DATE CREATED:* | 1/11/2017 9:49 AM | | *DATE MODIFIED:* | 1/11/2017 9:49 AM | |

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| 8. Find the limit.  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | 1 | |  | b. |  | |  | c. | 0 | |  | d. |  | |  | e. | –1 |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | Section 1.5 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CALC074 - Evaluate one-sided limits | | *OTHER:* | Skill | | *DATE CREATED:* | 1/11/2017 9:49 AM | | *DATE MODIFIED:* | 1/11/2017 9:49 AM | |

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| 9. Find the limit.  ​  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. | 14 | |  | d. | –7 | |  | e. | –14 |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | Section 1.5 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CALC081 - Evaluate the limit of a function | | *OTHER:* | Skill | | *DATE CREATED:* | 1/11/2017 9:49 AM | | *DATE MODIFIED:* | 1/11/2017 9:49 AM | |

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| 10. Find the limit.  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | 1 | |  | b. | 0 | |  | c. |  | |  | d. |  | |  | e. |  |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | Section 1.5 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CALC074 - Evaluate one-sided limits | | *OTHER:* | Skill | | *DATE CREATED:* | 1/11/2017 9:49 AM | | *DATE MODIFIED:* | 1/11/2017 9:49 AM | |

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| 11. Find the limit (if it exists).  ​  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. | 0 | |  | d. |  | |  | e. | Limit does not exist |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | Section 1.5 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CALC082 - Identify a limit that does not exist | | *OTHER:* | Skill | | *DATE CREATED:* | 1/11/2017 9:50 AM | | *DATE MODIFIED:* | 1/11/2017 9:50 AM | |

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| 12. Use a graphing utility to graph the function  and determine the one-sided limit .  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. | 0 | |  | d. | 27 | |  | e. | 18 |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | Section 1.5 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CALC083 - Estimate one-sided limits from a graph | | *OTHER:* | Skill | | *DATE CREATED:* | 1/11/2017 9:50 AM | | *DATE MODIFIED:* | 1/11/2017 9:50 AM | |

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| 13. Use a graphing utility to graph the function  and determine the following one-sided limit.  ​  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. | 6 | |  | c. | –6 | |  | d. |  | |  | e. | 0 |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | Section 1.5 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CALC083 - Estimate one-sided limits from a graph | | *OTHER:* | Skill | | *DATE CREATED:* | 1/11/2017 9:50 AM | | *DATE MODIFIED:* | 1/11/2017 9:50 AM | |

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| 14. A 25-foot ladder is leaning against a house (see figure). If the base of the ladder is pulled away from the house at a rate of 2 feet per second, the top will move down the wall at a rate of  ft/sec, where *x* is the distance between the base of the ladder and the house. Find the rate *r* when *x* is 24 feet.  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | *r* =  ft/sec | |  | b. | *r* = ft/sec | |  | c. | ft/sec | |  | d. | *r* = ft/sec | |  | e. | *r* = ft/sec |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *DIFFICULTY:* | Easy | | *REFERENCES:* | Section 1.5 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CALC084 - Evaluate functions in applications | | *OTHER:* | Application | | *DATE CREATED:* | 1/11/2017 9:50 AM | | *DATE MODIFIED:* | 1/11/2017 9:50 AM | |

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| 15. A 30-foot ladder is leaning against a house (see figure). If the base of the ladder is pulled away from the house at a rate of 2 feet per second, the top will move down the wall at a rate of  ft/sec, where *x* is the distance between the base of the ladder and the house. Find the limit of *r* as .  ​  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. | 60 | |  | c. | 0 | |  | d. |  | |  | e. | 30 |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | Section 1.5 | | *QUESTION TYPE:* | Multi-Mode (Multiple choice) | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CALC085 - Evaluate limits in applications | | *OTHER:* | Application | | *DATE CREATED:* | 1/11/2017 9:50 AM | | *DATE MODIFIED:* | 1/11/2017 9:50 AM | |