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| 1. Determine whether approaches  or  as  approaches –2 from the left and from the right by completing the tables below.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | *x* | –2.5 | –2.1 | –2.01 | –2.001 | |  |  |  |  |  |   ​   |  |  |  |  |  | | --- | --- | --- | --- | --- | | *x* | –1.999 | –1.99 | –1.9 | –1.5 | |  |  |  |  |  |   ​   |  |  |  | | --- | --- | --- | |  | a. | , | |  | b. | , | |  | c. | , | |  | d. | , |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.5.11 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.97 - Evaluate an infinite limit from a table of values | | *OTHER:* | Skill | | *NOTES:* | Section 2.5 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 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:* | 2.5.14 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.98 - Identify the vertical asymptotes (if any) of the graph of a function | | *OTHER:* | Skill | | *NOTES:* | Section 2.5 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 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:* | 2.5.17 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.98 - Identify the vertical asymptotes (if any) of the graph of a function | | *OTHER:* | Skill | | *NOTES:* | Section 2.5 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 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:* | 2.5.20 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.98 - Identify the vertical asymptotes (if any) of the graph of a function | | *OTHER:* | Skill | | *NOTES:* | Section 2.5 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 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:* | 2.5.25 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.98 - Identify the vertical asymptotes (if any) of the graph of a function | | *OTHER:* | Skill | | *NOTES:* | Section 2.5 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 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:* | 2.5.26 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.98 - Identify the vertical asymptotes (if any) of the graph of a function | | *OTHER:* | Skill | | *NOTES:* | Section 2.5 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 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:* | 2.5.33 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.98 - Identify the vertical asymptotes (if any) of the graph of a function | | *OTHER:* | Skill | | *NOTES:* | Section 2.5 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |

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| 8. Find the limit.  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | 1 | |  | b. |  | |  | c. | 0 | |  | d. |  | |  | e. | ​–1 |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.5.45 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.92 - Evaluate one-sided limits | | *OTHER:* | Skill | | *NOTES:* | Section 2.5 | | *DATE CREATED:* | 7/11/2017 8:26 AM | | *DATE MODIFIED:* | 7/11/2017 8:26 AM | |

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| 9. Find the limit.  ​  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. | 4 | |  | d. | –2 | |  | e. | –4 |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.5.51 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.99 - Evaluate the limit of a function | | *OTHER:* | Skill | | *NOTES:* | Section 2.5 | | *DATE CREATED:* | 7/11/2017 8:26 AM | | *DATE MODIFIED:* | 7/11/2017 8:26 AM | |

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| 10. Find the limit.  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | 1 | |  | b. | 0 | |  | c. | –1 | |  | d. |  | |  | e. |  |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.5.54 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.92 - Evaluate one-sided limits | | *OTHER:* | Skill | | *NOTES:* | Section 2.5 | | *DATE CREATED:* | 7/11/2017 8:26 AM | | *DATE MODIFIED:* | 7/11/2017 8:26 AM | |

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| 11. Find the following limit if it exists: . Use  when appropriate.  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. | 4 | |  | c. | 1 | |  | d. |  | |  | e. | does not exist |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.5.58 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.100 - Evaluate limits involving logarithmic functions | | *OTHER:* | Skill | | *NOTES:* | Section 2.5 | | *DATE CREATED:* | 7/11/2017 8:26 AM | | *DATE MODIFIED:* | 7/11/2017 8:26 AM | |

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| 12. Find the limit (if it exists).  ​  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. | 0 | |  | d. |  | |  | e. | Limit does not exist. |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.5.61 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.101 - Identify a limit that does not exist | | *OTHER:* | Skill | | *NOTES:* | Section 2.5 | | *DATE CREATED:* | 7/11/2017 8:26 AM | | *DATE MODIFIED:* | 7/11/2017 8:26 AM | |

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| 13. Use a graphing utility to graph the function and determine the one-sided limit .  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. | 0 | |  | d. | 3 | |  | e. | 2 |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.5.63 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.102 - Estimate one-sided limits from a graph | | *OTHER:* | Skill | | *NOTES:* | Section 2.5 | | *DATE CREATED:* | 7/11/2017 8:26 AM | | *DATE MODIFIED:* | 7/11/2017 8:26 AM | |

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| 14. Use a graphing utility to graph the function and determine the following one-sided limit.  ​  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. | 4 | |  | c. | –4 | |  | d. |  | |  | e. | 0 |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.5.66 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.102 - Estimate one-sided limits from a graph | | *OTHER:* | Skill | | *NOTES:* | Section 2.5 | | *DATE CREATED:* | 7/11/2017 8:26 AM | | *DATE MODIFIED:* | 7/11/2017 8:26 AM | |

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| 15. A petrol car is parked 35 feet from a long warehouse (see figure). The revolving light on top of the car turns at a rate of  revolution per second. The rate at which the light beam moves along the wall is ft/sec. Find the rate *r* when *θ* is .  ​   ft  ​   |  |  |  | | --- | --- | --- | |  | a. | ft/sec | |  | b. | ft/sec | |  | c. | ft/sec | |  | d. | ft/sec | |  | e. | ft/sec |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *DIFFICULTY:* | Easy | | *REFERENCES:* | 2.5.75a | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.103 - Evaluate functions in applications | | *OTHER:* | Application | | *NOTES:* | Section 2.5 | | *DATE CREATED:* | 7/11/2017 8:26 AM | | *DATE MODIFIED:* | 7/11/2017 8:26 AM | |

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| 16. A petrol car is parked 65 feet from a long warehouse (see figure). The revolving light on top of the car turns at a rate of  revolution per second. The rate at which the light beam moves along the wall is  ft/sec. Find the limit of *r* as .  ​​  ​​ ft  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. | 0 | |  | d. | 65 | |  | e. |  |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.5.75c | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.104 - Evaluate limits in applications | | *OTHER:* | Application | | *NOTES:* | Section 2.5 | | *DATE CREATED:* | 7/11/2017 8:26 AM | | *DATE MODIFIED:* | 7/11/2017 8:26 AM | |

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| 17. A 35-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 28 feet.  ​   ft  ​   |  |  |  | | --- | --- | --- | |  | a. | ft/sec | |  | b. | ft/sec | |  | c. | ft/sec | |  | d. | ft/sec | |  | e. | ft/sec |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *DIFFICULTY:* | Easy | | *REFERENCES:* | 2.5.76a | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.103 - Evaluate functions in applications | | *OTHER:* | Application | | *NOTES:* | Section 2.5 | | *DATE CREATED:* | 7/11/2017 8:26 AM | | *DATE MODIFIED:* | 7/11/2017 8:26 AM | |

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| 18. A 20-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 .  ​   ft  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. | 40 | |  | c. | 0 | |  | d. |  | |  | e. | 20 |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.5.76c | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.104 - Evaluate limits in applications | | *OTHER:* | Application | | *NOTES:* | Section 2.5 | | *DATE CREATED:* | 7/11/2017 8:26 AM | | *DATE MODIFIED:* | 7/11/2017 8:26 AM | |