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| 1. Use the graph as shown to determine the following limits, and discuss the continuity of the function at .  ​  (i)  (ii)  (iii)  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | 2, 2, 2, not continuous | |  | b. | 3, 3, 3, continuous | |  | c. | 4, 4, 4, not continuous | |  | d. | 3, 3, 3, not continuous | |  | e. | 2, 2, 2, continuous |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.4.3a | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.91 - Estimate a limit and points of discontinuity from a graph | | *OTHER:* | Skill | | *NOTES:* | Section 2.4 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |

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| 2. Use the graph as shown to determine the following limits, and discuss the continuity of the function at .  ​  (i)  (ii)  (iii)  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | 3, 3, 3, continuous | |  | b. | 2, 2, 2, not continuous | |  | c. | 3, 3, 3, not continuous | |  | d. | –3, –3, –3, continuous | |  | e. | 2, 2, 2, continuous |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.4.4a | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.91 - Estimate a limit and points of discontinuity from a graph | | *OTHER:* | Skill | | *NOTES:* | Section 2.4 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |

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| 3. Use the graph to determine the following limits, and discuss the continuity of the function at .   (i)  (ii)  (iii)  ​     |  |  |  | | --- | --- | --- | |  | a. | 1, –1, does not exist, not continuous | |  | b. | 1, 0, does not exist, not continuous | |  | c. | 0, 1, does not exist, not continuous | |  | d. | –4, 0, does not exist, not continuous | |  | e. | 0, 1, 0, continuous |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.4.6a | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.91 - Estimate a limit and points of discontinuity from a graph | | *OTHER:* | Skill | | *NOTES:* | Section 2.4 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |

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| 4. Find the limit (if it exists).  ​  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. | 0 | |  | c. | Limit does not exist. | |  | d. |  | |  | e. |  |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *DIFFICULTY:* | Easy | | *REFERENCES:* | 2.4.10 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.92 - Evaluate one-sided limits | | *OTHER:* | Skill | | *NOTES:* | Section 2.4 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |

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| 5. Find the limit (if it exists).  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | 0 | |  | b. |  | |  | c. |  | |  | d. |  | |  | e. | Limit does not exist. |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.4.12 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.92 - Evaluate one-sided limits | | *OTHER:* | Skill | | *NOTES:* | Section 2.4 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |

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| 6. Find the limit (if it exists).  ​  , where  ​   |  |  |  | | --- | --- | --- | |  | a. | Limit does not exist. | |  | b. | 0 | |  | c. | 5 | |  | d. | 6 | |  | e. | 15 |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.4.20 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.92 - Evaluate one-sided limits | | *OTHER:* | Skill | | *NOTES:* | Section 2.4 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |

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| 7. Find the limit (if it exists). Note that represents the greatest integer function.  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | 3 | |  | b. | –2 | |  | c. | 2 | |  | d. | –3 | |  | e. | does not exist |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.4.23 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.92 - Evaluate one-sided limits | | *OTHER:* | Skill | | *NOTES:* | Section 2.4 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |

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| 8. Find the limit (if it exists). Note that represents the greatest integer function.  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | 3 | |  | b. | Limit does not exist. | |  | c. | 2 | |  | d. | 0 | |  | e. | 1 |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.4.24 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.92 - Evaluate one-sided limits | | *OTHER:* | Skill | | *NOTES:* | Section 2.4 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |

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| 9. Discuss the continuity of the function .  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | is discontinuous at . | |  | b. | is discontinuous at . | |  | c. | is discontinuous at . | |  | d. | is continuous for all real *x*. | |  | e. | is continuous at . |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *DIFFICULTY:* | Easy | | *REFERENCES:* | 2.4.32 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.93 - Identify the discontinuities of a function if any exist | | *OTHER:* | Skill | | *NOTES:* | Section 2.4 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |

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| 10. Find the *x*-values (if any) at which the function  is not continuous. Which of the discontinuities are removable?  ​   |  |  |  | | --- | --- | --- | |  | a. | , removable | |  | b. | , removable | |  | c. | , not removable | |  | d. | continuous everywhere | |  | e. | , removable |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.4.42 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.94 - Identify the removable discontinuities of a function | | *OTHER:* | Skill | | *NOTES:* | Section 2.4 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |

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| 11. Find the *x-*values (if any) at which is not continuous.  ​   |  |  |  | | --- | --- | --- | |  | a. | is not continuous at  and  has a removable discontinuity at . | |  | b. | is not continuous at  and both the discontinuities are nonremovable. | |  | c. | is not continuous at  and  has a removable discontinuity at . | |  | d. | is not continuous at  and  has a removable discontinuity at . | |  | e. | is continuous for all real *x*. |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *DIFFICULTY:* | Easy | | *REFERENCES:* | 2.4.47 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.94 - Identify the removable discontinuities of a function | | *OTHER:* | Skill | | *NOTES:* | Section 2.4 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |

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| 12. Find the *x*-values (if any) at which the function is not continuous. Which of the discontinuities are removable?  ​   |  |  |  | | --- | --- | --- | |  | a. | 4 and -4, removable | |  | b. | discontinuous everywhere 0 00 | |  | c. | continuous everywhere 0 00 | |  | d. | 4 and -4, not removable | |  | e. | 0, removable |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.4.49 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.94 - Identify the removable discontinuities of a function | | *OTHER:* | Skill | | *NOTES:* | Section 2.4 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |

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| 13. Find the *x*-values (if any) at which the function is not continuous. Which of the discontinuities are removable?  ​   |  |  |  | | --- | --- | --- | |  | a. | no points of discontinuity | |  | b. | (not removable),  (removable) | |  | c. | (removable),  (not removable) | |  | d. | no points of continuity | |  | e. | (not removable),  (not removable) |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.4.51 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.94 - Identify the removable discontinuities of a function | | *OTHER:* | Skill | | *NOTES:* | Section 2.4 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |

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| 14. Find the *x-*values (if any) at which is not continuous.  ​   |  |  |  | | --- | --- | --- | |  | a. | is not continuous at and the discontinuity is nonremovable. | |  | b. | is not continuous at  and the discontinuity is removable. | |  | c. | is continuous for all real . | |  | d. | is not continuous at  and the discontinuity is removable. | |  | e. | is not continuous at  and  is a removable discontinuity. |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.4.53 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.94 - Identify the removable discontinuities of a function | | *OTHER:* | Skill | | *NOTES:* | Section 2.4 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |

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| 15. Find the constant  such that the function  ​  ​  is continuous on the entire real line.  ​   |  |  |  | | --- | --- | --- | |  | a. | 1 | |  | b. | –8 | |  | c. | 8 | |  | d. | –15 | |  | e. | 15 |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.4.72 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.95 - Identify the value of a parameter to ensure a function is continuous | | *OTHER:* | Skill | | *NOTES:* | Section 2.4 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |

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| 16. Find the constant *a* such that the function  ​  ​  is continuous on the entire real line.  ​   |  |  |  | | --- | --- | --- | |  | a. | , | |  | b. | , | |  | c. | , | |  | d. | , | |  | e. | , |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.4.73 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.95 - Identify the value of a parameter to ensure a function is continuous | | *OTHER:* | Skill | | *NOTES:* | Section 2.4 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |

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| 17. Find the value of *c* guaranteed by the Intermediate Value Theorem.  ​  , ,  ​   |  |  |  | | --- | --- | --- | |  | a. | 0 | |  | b. | 2 | |  | c. | 4 | |  | d. | 1 | |  | e. | 3 |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *DIFFICULTY:* | Easy | | *REFERENCES:* | 2.4.103 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.96 - Identify the value of c guaranteed by the Intermediate Value Theorem | | *OTHER:* | Skill | | *NOTES:* | Section 2.4 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |

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| 18. Find the value of *c* guaranteed by the Intermediate Value Theorem.  ​  , ,  ​   |  |  |  | | --- | --- | --- | |  | a. | 13 | |  | b. | 4 | |  | c. | 3 | |  | d. | 11 | |  | e. | 12 |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.4.106 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.96 - Identify the value of c guaranteed by the Intermediate Value Theorem | | *OTHER:* | Skill | | *NOTES:* | Section 2.4 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |

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| 19. A long distance phone service charges $0.45 for the first 11 minutes and $0.1 for each additional minute or fraction thereof. Use the greatest integer function to write the cost *C* of a call in terms of time *t* (in minutes).  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. |  | |  | d. |  | |  | e. |  |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.4.117 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.46 - Create functions in applications | | *OTHER:* | Application | | *NOTES:* | Section 2.4 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |

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| 20. Find all values of *c* such that *f* is continuous on .  ​  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. |  | |  | d. | , | |  | e. | , |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *DIFFICULTY:* | Medium | | *REFERENCES:* | 2.4.127 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *LEARNING OBJECTIVES:* | CETF.LAED.11.95 - Identify the value of a parameter to ensure a function is continuous | | *OTHER:* | Skill | | *NOTES:* | Section 2.4 | | *DATE CREATED:* | 7/11/2017 8:25 AM | | *DATE MODIFIED:* | 7/11/2017 8:25 AM | |