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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 |
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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 |
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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 |
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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 |
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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 |
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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 |
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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 |
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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 |
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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 |
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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 |
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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 |
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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 |
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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 |
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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 |
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