**Determine whether each function is continuous at the given -values. Justify using the continuity test. If discontinuous, identify the type of discontinuity as infinite, jump, or removable.**

|  |  |  |  |
| --- | --- | --- | --- |
| **1.** |  | **2.** |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **3.** |  | **4.** |  |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **5.** |  | **6.** |  |
|  |  |  |  |
|  |  |  |  |

**Find the value of so that is continuous.**

|  |  |  |  |
| --- | --- | --- | --- |
| **7.** |  | **8.** |  |
|  |  |  |  |

**Determine between which consecutive integers the real zeros of function are located on the given interval.**

|  |  |  |  |
| --- | --- | --- | --- |
| **9.** |  | **10.** |  |
|  |  |  |  |
|  |  |  |  |

**Use the graph of each function to describe its end behavior. Support the conjecture numerically.**

|  |  |  |
| --- | --- | --- |
| **11.** |  | |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **12.** |  | |
|  |  |  |

**Evaluate the following limits.**

|  |  |  |  |
| --- | --- | --- | --- |
| **13.** |  | **14.** |  |
|  |  |  |  |

**Determine the interval(s) on which the function is increasing and the interval(s) on which the function is decreasing.**

|  |  |  |
| --- | --- | --- |
| **15.** |  | |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **16.** |  | |
|  |  |  |

**ANSWERS**

**Determine whether each function is continuous at the given -values. Justify using the continuity test. If discontinuous, identify the type of discontinuity as infinite, jump, or removable.**

|  |  |  |  |
| --- | --- | --- | --- |
| **1.** |  | **2.** |  |
|  | |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  | |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **3.** |  | **4.** |  | |
|  |  |  |  | |
|  | |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  | |  | |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  | |

|  |  |  |  |
| --- | --- | --- | --- |
| **5.** |  | **6.** |  |
|  | |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  |   butis undefined  has a removable discontinuity at  has an infinite discontinuity at |  | |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  |   butis undefined  has a removable discontinuity at |

**Find the value of so that is continuous.**

|  |  |  |  |
| --- | --- | --- | --- |
| **7.** |  | **8.** |  |
|  |  |  |  |

**Determine between which consecutive integers the real zeros of function are located on the given interval.**

|  |  |  |  |
| --- | --- | --- | --- |
| **9.** |  | **10.** |  |
|  |  |  |  |
|  | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  | |  |  |  |  |  |  |   is negative positive andis positive,  has zero in interval: |  | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  | |  |  |  |  |  |  |     is negative and is positive**,**    is positive and is negative    has zeros in intervals: |

**Use the graph of each function to describe its end behavior. Support the conjecture numerically.**

|  |  |  |
| --- | --- | --- |
| **11.** |  | |
|  |  | From the graph, it appears that:  as andas  The table supports this conjecture.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  | |  |  |  |  | **-** | **-** | |

|  |  |  |
| --- | --- | --- |
| **12.** |  | |
|  |  | From the graph, it appears that:  asandas  The table supports this conjecture.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  | |  |  |  |  |  |  | |

**Evaluate the following limits.**

|  |  |  |  |
| --- | --- | --- | --- |
| **13.** |  | **14.** |  |
|  |  |  |  |

**Determine the interval(s) on which the function is increasing and the interval(s) on which the function is decreasing.**

|  |  |  |
| --- | --- | --- |
| **15.** |  | |
|  |  | From the graph, it appears that:  A function is increasing for  A function is decreasing for  The table supports this conjecture.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  | |  |  |  |  |  |  | |

|  |  |  |
| --- | --- | --- |
| **16.** |  | |
|  |  | From the graph, it appears that:  A function is increasing for  A function is decreasing for  A function s increasing for  The table supports this conjecture.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  | |  |  |  |  |  |  | |