**Multiple choices**

|  |  |
| --- | --- |
| **1.** | Which of the following is an even function? |
|  | **a.)** $f\left(x\right)=\sqrt{x}$ | **b.)** $f\left(x\right)=\frac{1}{x}$ |
|  | **c.)** $f\left(x\right)=\left|x\right|$ | **d.)** $\left(x-2\right)^{2}$ |

|  |  |
| --- | --- |
| **2.** | Given that $(3,1)$ is a point on a graph that is symmetric with respect to the origin, what other point is also on the graph? |
|  | **a.)** $(3,1)$  | **b.)** $(-3,-1)$  |
|  | **c.)** $(-3,1)$  | **d.)** $(3,-1)$  |

**3. Complete the chart.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Tests for Symmetry** | **The graph of a relation is symmetric with respect to the x -axis** | **The graph of a relation is symmetric with respect to the y -axis** | **The graph of a relation is symmetric with respect to the origin** |
| $$(x,y)$$ |  |  |  |

**4. Determine whether the following are even, odd, or neither.**

|  |  |  |  |
| --- | --- | --- | --- |
| **a.** | $$f\left(x\right)=3x^{5}-x^{3}-x$$ | **b.** | $$h\left(y\right)=2y^{2}-6y$$ |
|  |  |  |  |

**5. Use the graph of function to approximate its zeros. Then find the zeros of each function algebraically.**

|  |  |
| --- | --- |
|  | $$ f\left(x\right)=2x^{3}-3x$$ |
|  |  |  |

**ANSWERS**

**Multiple choices**

|  |  |
| --- | --- |
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|  |  |  |  |
| --- | --- | --- | --- |
| **Tests for Symmetry** | **The graph of a relation is symmetric with respect to the x -axis** | **The graph of a relation is symmetric with respect to the y -axis** | **The graph of a relation is symmetric with respect to the origin** |
| $$(x,y)$$ | ($x,-y)$ | ($-x,y)$ | ($-x,-y)$ |

**4. Determine whether the following are even, odd, or neither.**

|  |  |  |  |
| --- | --- | --- | --- |
| **a.** | $$f\left(x\right)=3x^{5}-x^{3}-x$$ | **b.** | $$h\left(y\right)=2y^{2}-6y$$ |
|  | $$f\left(-x\right)=3\left(-x\right)^{5}-\left(-x\right)^{3}-\left(-x\right)$$$$f\left(-x\right)=-3x^{5}+x^{3}+x$$$$f\left(-x\right)=-(3x^{5}-x^{3}-x)$$$f\left(-x\right)=-f\left(x\right)$**The function is odd.** |  | $$h\left(-y\right)=2\left(-y\right)^{2}-6\left(-y\right)$$$$h\left(-y\right)=2y^{2}+6y$$$$h\left(-y\right)\ne -h\left(y\right)$$$$h\left(-y\right)\ne h\left(y\right)$$**The function is neither.** |

**5. Use the graph of function to approximate its zeros. Then find the zeros of each function algebraically.**

|  |  |
| --- | --- |
|  | $$ f\left(x\right)=2x^{3}-3x$$ |
|  |  | $$Graphically$$$$f\left(x\right)=2x^{3}-3x$$$$x -intercepts -1.2 ,0 and 1.2 $$$$Algebraically$$$$f\left(x\right)=0$$$$2x^{3}-3x=0$$$$x\left(x^{2}-3\right)=0$$$$x\left(x-\sqrt{3}\right)\left(x+\sqrt{3}\right)=0$$$$ x=0 $$$x-\sqrt{3}=0$$ x=\sqrt{3}≈1.71$$x+\sqrt{3}=0 x=-\sqrt{3}$$≈-1.71$$$ The zeros of f are 0 , \sqrt{3} and -\sqrt{3}$$ |