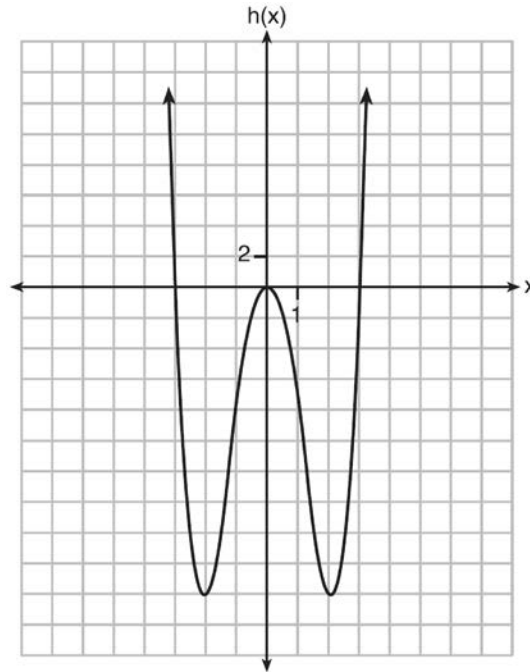


F.BF.B.3: Even and Odd Functions 1

1 Functions f , g , and h are given below.

$$f(x) = \sin(2x)$$

$$g(x) = f(x) + 1$$



Which statement is true about functions f , g , and h ?

- | | |
|---|--|
| 1) $f(x)$ and $g(x)$ are odd, $h(x)$ is even. | 3) $f(x)$ is odd, $g(x)$ is neither, $h(x)$ is even. |
| 2) $f(x)$ and $g(x)$ are even, $h(x)$ is odd. | 4) $f(x)$ is even, $g(x)$ is neither, $h(x)$ is odd. |

2 Which graph has line symmetry with respect to the y -axis?

- | | |
|--------------|-----------------|
| 1) $y = x$ | 3) $y = \sin x$ |
| 2) $y = x^2$ | 4) $y = \tan x$ |

3 Which function is even?

- | | |
|---------------------|----------------------|
| 1) $f(x) = x^3 + 2$ | 3) $f(x) = x + 2 $ |
| 2) $f(x) = x^2 + 1$ | 4) $f(x) = \sin(2x)$ |

4 Which function is even?

1) $f(x) = \sin x$

2) $f(x) = x^2 - 4$

3) $f(x) = |x - 2| + 5$

4) $f(x) = x^4 + 3x^3 + 4$

5 Which equation represents an odd function?

1) $y = \sin x$

2) $y = \cos x$

3) $y = (x + 1)^3$

4) $y = e^{5x}$

6 If $f(x)$ is an even function, which function must also be even?

1) $f(x - 2)$

2) $f(x) + 3$

3) $f(x + 1)$

4) $f(x + 1) + 3$

7 For $f(x) = \cos x$, which statement is true?

1) $2f(x)$ and $f(2x)$ are even functions.

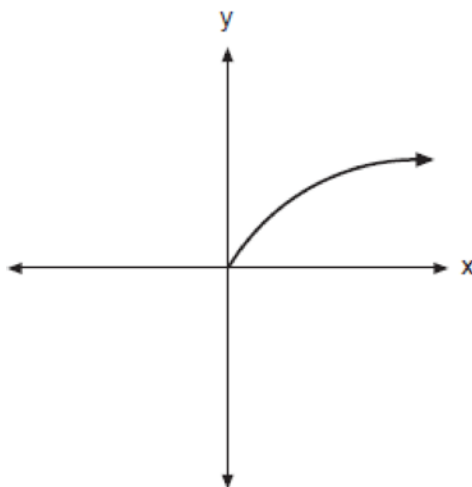
2) $f(2x)$ and $f(x) + 2$ are odd functions.

3) $2f(x)$ and $f\left(x + \frac{\pi}{2}\right)$ are odd functions.

4) $f(x) + 2$ is an odd function and $f\left(x + \frac{\pi}{2}\right)$ is an even function.

8 Can $f(x) = x^3 + 7$ be classified as an odd function? Justify your answer.

9 The entire graph of $f(x)$ is symmetric with respect to the origin. If the accompanying graph represents $f(x)$ for $x \geq 0$, sketch, on the same set of axes, the graph of $f(x)$ for $x \leq 0$.



F.BF.B.3: Even and Odd Functions 1 Answer Section

1 ANS: 3

$f(x) = -f(x)$, so $f(x)$ is odd. $g(-x) \neq g(x)$, so $g(x)$ is not even. $g(-x) \neq -g(x)$, so $g(x)$ is not odd. $h(-x) = h(x)$, so $h(x)$ is even.

REF: fall1502aaii

2 ANS: 2

REF: 068120siii

3 ANS: 2

$$f(x) = f(-x)$$

$$x^2 + 1 = (-x)^2 + 1$$

$$x^2 + 1 = x^2 + 1$$

REF: 082323aaii

4 ANS: 2

$$f(x) = f(-x)$$

$$x^2 - 4 = (-x)^2 - 4$$

$$x^2 - 4 = x^2 - 4$$

REF: 061806aaii

5 ANS: 1

The graph of $y = \sin x$ is unchanged when rotated 180° about the origin.

REF: 081614aaii

6 ANS: 2

REF: 081911aaii

7 ANS: 1

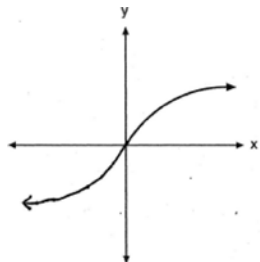
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8 ANS:

No, because a 180° rotation of f about the origin does not map f onto itself.

REF: 062432aaii

9 ANS:



REF: 060821b