MATH 2 **FUNCTIONS 4** **NAME:**

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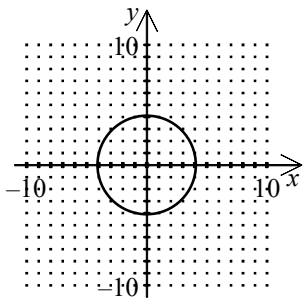
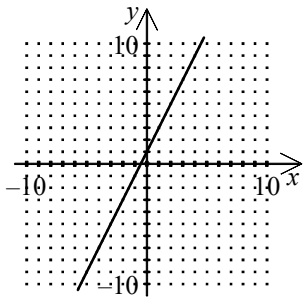
1. Use the vertical-line test to determine which graph does NOT represent a function.

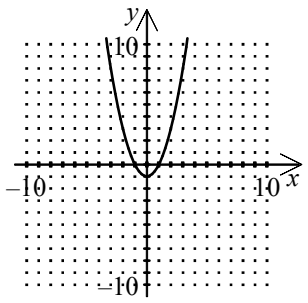
[A]



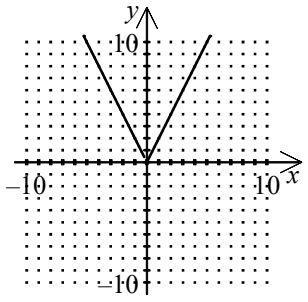
[B]



[C]



[D]



2. Determine which equation represents y as a function of x.

[F] $y = 8x - 4$ **[G]** $x = 8$

[H] $x = -4y^2$ **[J]** $x = 10$

3. The graph of the equation $xy = -4$ is symmetric with respect to which of the following?

[L] the y - axis **[M]** the x - axis

[N] the line $y = -x + 4$ **[P]** the line $y = x$

4. Find the domain and range of the function.

$f(x) = \sqrt{x-2}$,

[A] Domain: $[0, \infty)$; Range: $[2, \infty)$

[B] Domain: $[-2, \infty)$; Range: $[0, \infty)$

[C] Domain: $[0, \infty)$; Range: $[-2, \infty)$

[D] Domain: $[2, \infty)$; Range: $[0, \infty)$

5. Find the domain and range of the function.

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

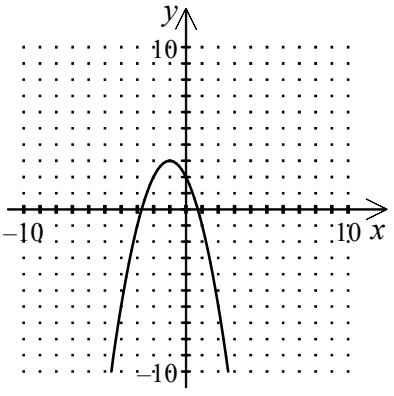
[F] Domain: $(-\infty, \infty)$; Range: $[2, \infty)$

[G] Domain: $(-\infty, 2]$; Range: $(-\infty, \infty)$

[H] Domain: $[2, \infty)$; Range: $(-\infty, \infty)$

[J] Domain: $(-\infty, \infty)$; Range: $(-\infty, 2]$

6. Determine the intervals on which the function is increasing, decreasing, or constant.



$y = -(x+1)^2 + 3$

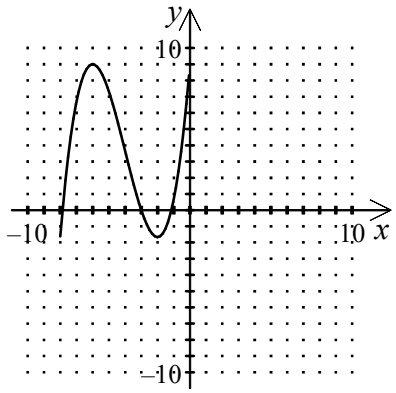
[L] Increasing on $(-\infty, -1)$; Decreasing on $(-1, \infty)$

[M] Increasing on $(3, \infty)$; Decreasing on $(-\infty, 3)$

[N] Increasing on $(-1, \infty)$; Decreasing on $(-\infty, -1)$

[P] Increasing on $(-3, \infty)$; Decreasing on $(-\infty, -3)$

7. Determine the intervals on which the function is increasing, decreasing, or constant.



[A] Decreasing on $(-8,\ -2)$; Increasing on $(-2,\ 0)$

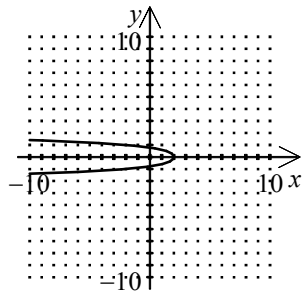
[B] Increasing on $(-8,\ -2)$; Decreasing on $(-2,\ 0)$

[C] Decreasing on $(-8,\ -6)$ and $(-2,\ 0)$; Increasing on $(-6,\ -2)$

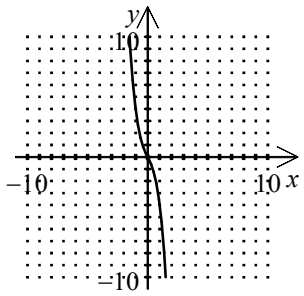
[D] Increasing on $(-8,\ -6)$ and $(-2,\ 0)$; Decreasing on $(-6,\ -2)$

8. Identify the graph that represents an even function.

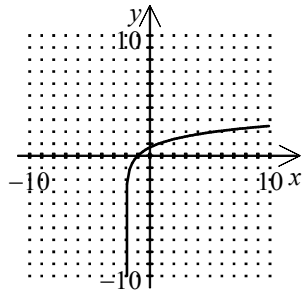
[F]



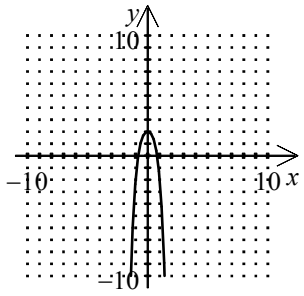
[G]



[H]



[J]



9. Describe the transformation that occurs in the function $f(x) = (x-5)^2 + 6$.

[L] Horizontal shift of $f(x)$ 5 units to the right
Vertical shift of 6 units upward

[M] Horizontal shift of $f(x)$ 5 units to the right
Vertical shift of 6 units downward

[N] Horizontal shift of $f(x)$ 5 units to the left
Vertical shift of 6 units downward

[P] Horizontal shift of $f(x)$ 5 units to the left
Vertical shift of 6 units upward

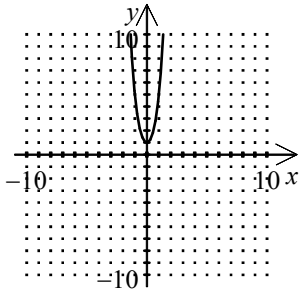
10. Since 1993, Theo Brooks has owned a bookstore called The Page Turner. The number of books B, in thousands, that The Page Turner has sold each year can be modeled by the function

$B(t) = t^2 + 22t + 400$

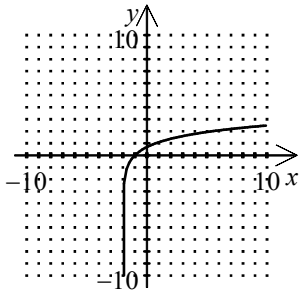
where t is the number of years after 1993. Using this model, estimate the number of books sold in 1999.

11. Identify the graph that represents *neither* an even nor an odd function.

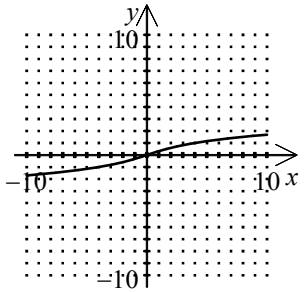
[F]



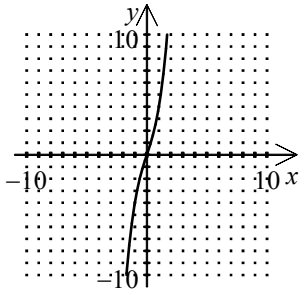
[G]



[H]

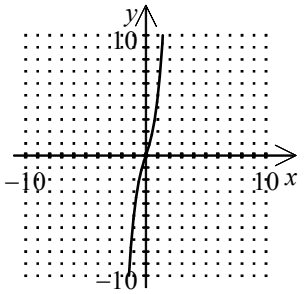


[J]

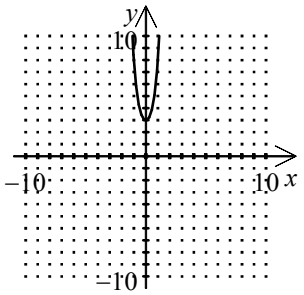


12. Identify the graph that represents an odd function.

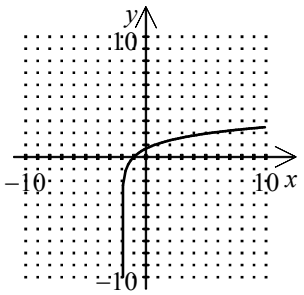
[L]



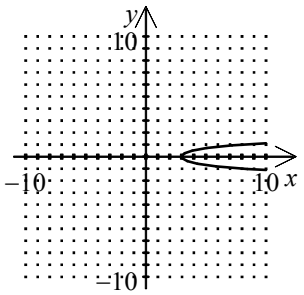
[M]



[N]



[P]



Reference: [2.1.2.12]

[1] [A]

Reference: [2.1.2.21]

[2] [F]

Reference: [3.1.1.1]

[3] [P]

Reference: [1.2.1.24]

[4] [D]

Reference: [1.2.1.25]

[5] [J]

Reference: [1.2.3.31]

[6] [L]

Reference: [1.2.3.33]

[7] [D]

Reference: [1.2.6.46]

[8] [J]

Reference: [1.3.2.56]

[9] [L]

Reference: [1.1.4.19]

[10] 568,000

Reference: [1.2.6.46]

[11] [G]

Reference: [1.2.6.46]

[12] [L]