

- 1) Identify the symmetry: $f(x) = x^2 + x - 4$
- a. Symmetrical to the x-axis
 - b. Symmetrical to the origin
 - c. Symmetrical to the y-axis
 - d. Not symmetrical
- 2) Identify the symmetry: $f(x) = x^3 - 6x$
- a. Symmetrical to the x-axis
 - b. Symmetrical to the origin
 - c. Symmetrical to the y-axis
 - d. Not symmetrical
- 3) Identify the symmetry: $f(x) = x^4 + 8$
- a. Symmetrical to the x-axis
 - b. Symmetrical to the origin
 - c. Symmetrical to the y-axis
 - d. Not symmetrical
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True or false:

- 4) A function can be symmetrical to an axis AND the origin at the same time.
- 5) A function can be symmetrical to the x-axis.
- 6) A function can be symmetrical to the y-axis AND have a y-intercept.
- 7) If $(3, -2)$ is a point on a graph that is symmetric with respect to the x-axis, then $(-3, -2)$ is also a point on the graph.
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- 8) Find **all** intercepts of the function $f(x) = x^2 + 8x - 20$. MORE THAN ONE ANSWER IS POSSIBLE!
- a. $(0, -20)$
 - b. $(10, 0)$
 - c. $(2, 0)$
 - d. $(-10, 0)$
 - e. $(-2, 0)$
 - f. $(-20, 0)$
- 9) Find **all** intercepts of the function $f(x) = x\sqrt{16 - x^2}$. MORE THAN ONE ANSWER IS POSSIBLE!
- a. $(16, 0)$
 - b. $(4, 0)$
 - c. $(0, 4)$
 - d. $(-4, 0)$
 - e. $(0, 0)$
 - f. $(0, 16)$
- 10) Find the points of intersection of the graphs of the following equations: MORE THAN ONE ANSWER IS POSSIBLE!
- $$x - y = 1$$
- $$x^2 + y^2 = 5$$
- a. $(3, 2)$
 - b. $(-1, -2)$
 - c. $(\sqrt{5}, 0)$
 - d. $(0, -1)$
 - e. $(2, 1)$
 - f. None of these
- 11) Find the line that is perpendicular to $y - 2x = 4$ that passes through the point $(2, 7)$
- a. $y = 2x + 3$
 - b. $y = -2x + 11$
 - c. $y = \frac{1}{2}x + 6$
 - d. $y = -\frac{1}{2}x + 8$
 - e. $y = 2x + 4$
 - f. None of these
- 12) Find the line that is parallel to $y - 2x = 4$ that passes through the point $(2, 7)$
- a. $y = 2x + 3$
 - b. $y = -2x + 11$
 - c. $y = \frac{1}{2}x + 6$
 - d. $y = -\frac{1}{2}x + 8$
 - e. $y = 2x + 4$
 - f. None of these

Match:

- | | |
|--------------------------|---------------------------|
| 13) General Form | a. $y = mx + b$ |
| 14) Vertical line | b. $y - b = mx$ |
| 15) Horizontal line | c. $y = b$ |
| 16) Point-slope form | d. $y - y_1 = m(x - x_1)$ |
| 17) Slope-intercept form | e. $x = a$ |
| | f. $Ax = By$ |
| | g. $Ax + By + C = 0$ |

- 18) Find the slope of the line passing through the points $(3, -1), (-2, -6)$
- 19) Find the y-intercept of the line that passes through the points $(3, -1), (-2, -6)$
- 20) True or false: The following points are collinear $(2, -2), (-2, 1), (-1, 0)$
- 21) True or false: It is possible for two lines with negative slopes to be perpendicular.
- 22) Given $f(x) = x^2 - 3$, find $f(8)$
- 23) Given $f(x) = x^2 - 3$, find $\frac{f(x + \Delta x) - f(x)}{\Delta x}$
- | | |
|--|--------------------|
| a. Δx | c. $2x + \Delta x$ |
| b. $\frac{x^2 + \Delta x^2 - 3}{\Delta x}$ | d. None of these |

Water runs into a vase of height 30 centimeters at a constant rate. The vase is full after 5 seconds. Use this information and the shape of the vase shown to answer questions 24 – 28 if d is the depth of the water in centimeters and t is the time in seconds.

- 24) True or false: d is a function of t .
- 25) True or false: t is a function of d .
- 26) Determine the domain of the function.
- | | |
|--------------|------------------|
| a. $(0, 5)$ | d. $[0, 5]$ |
| b. $[0, 5]$ | e. None of these |
| c. $[5, 30]$ | |
- 27) Determine the range of the function.
- | | |
|--------------|------------------|
| a. $(0, 30)$ | d. $[0, 30]$ |
| b. $[0, 30]$ | e. None of these |
| c. $[5, 30]$ | |
- 28) Which of the following graphs could be a model of the function?



