Practice Test A

1. Determine which symmetries the graph of the equation $3x + 2xy^2 = 1$ has.

2. Find the *x*- and *y*-intercepts of the graph of $y = x^2(x-3)(x+1)$.

3. Graph the equation $x^2 + y^2 - 2x - 2y = 2$.

4. Write the slope-intercept form of the equation of the line with slope -1 passing through the point $(2, 7)$.

5. Write an equation of the line parallel to the line $8x - 2y = 7$ and passing through $(2, -1)$.

6. Use $f(x) = -2x + 1$ and $g(x) = x^2 + 3x + 2$ to find $(fg)(2)$.

7. Use $f(x) = 2x - 3$ and $g(x) = 1 - 2x^2$ to evaluate $g(f(2))$.

8. Use $f(x) = x^2 - 2x$ to find $(f \circ f)(x)$.

9. If $f(x) = \begin{cases} x^3 - 2 \text{ if } x \le 0 \\ 1 - 2x^2 \text{ if } x > 0 \end{cases}$, then find: (a) $f(-1)$; (b) $f(0)$; (c) $f(1)$.

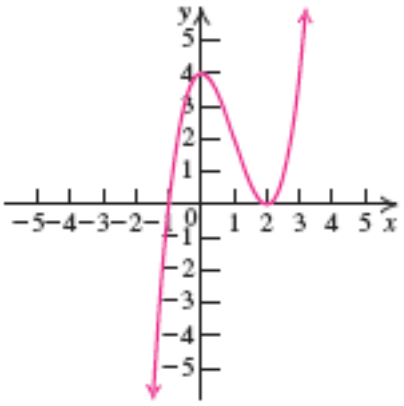
10. Find the domain of the function $f(x) = \dfrac{\sqrt{x}}{\sqrt{1-x}}$.

11. Find the domain of the function $f(x) = \sqrt{x^2 + x - 6}$.

12. Determine the average rate of change of the function $f(x) = 2x + 7$ between $x = 1$ and $x = 4$.

13. Determine whether the function $f(x) = 2x^4 - \dfrac{3}{x^2}$ is even, odd, or neither.

14. Find the intervals where the function is increasing or decreasing.



15. Suppose that the graph of *f* is given. Describe how the graph of $y = f(x-3)$ can be obtained from the graph of *f*.

16. A ball is thrown upward from the ground. After *t* seconds, the height *h* (in feet) above the ground is given by $h = 25-(2t-5)^2$. How many seconds does it take for the ball to reach a height of 25 feet?

17. If f is a one-to-one function and $f(2) = 7$, then find $f^{-1}(7)$.

18. Find the inverse function $f^{-1}(x)$ of the one-to-one function $f(x) = \dfrac{2x+1}{x-3}$.

19. Now that Jo has $1000 for a car in her savings account her dad takes over and deposits $100 each month into her account. Write an equation that relates the total amount of money, *A*, in Jo's account to the number of months, *x*, that Jo's dad has been putting money into her account.

20. The cost *C* in dollars for renting a car for one day is a function of the number of miles traveled, *m*. For a car renting for $30 per day and 25 cents per mile, this function is given by

$$C(m) = 0.25m + 30.$$

(a) Find the cost of renting this car for one day and driving 230 miles.

(b) If the charge for renting this car for one day is $57.50, how many miles were driven?