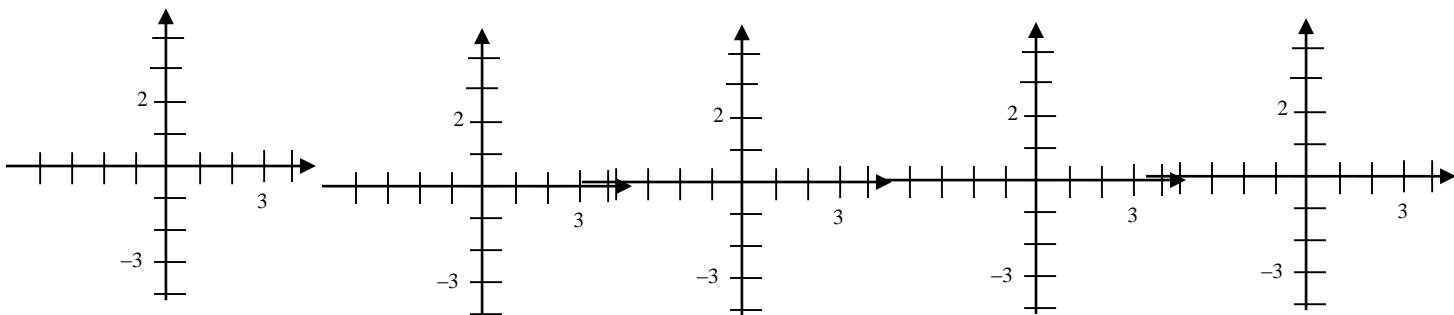


1. Graph each equation:

a)  $y = (x - 3)^2 + 1$       b)  $y = |x - 4| - 1$       c)  $y = \sqrt{x + 1} - 3$       d)  $y = -x + 4$       e)  $y = (x + 2)^3$



- $$2. \quad f(x) = \|x - 3\|. \text{ Find } f(2.5).$$

3. Find an equation of the line that passes through  $(15, 1)$  and is

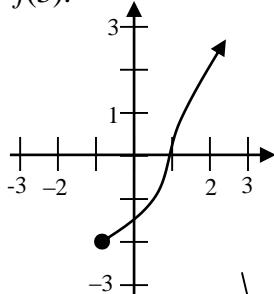
a) parallel to the line  $x - 3y = 1$       b) perpendicular to the line  $5x + 3y = 5$

4. A company's yearly increase in profit is approximately linear. In 2000 it made \$500,000 and in 2004 it made \$548,000. Estimate the approximate profits for 2007.

5. Determine which equation(s) represents  $y$  as a function of  $x$ .

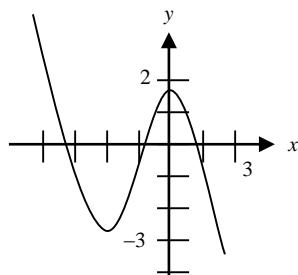
(a)  $y = |x|$       (b)  $3x + 2y = 9$       (c)  $y = (x - 2)^2 - 2$   
(d)  $y^2 = 5x - 2$       (e)  $|y| = 2x - 1$

6. Given  $f(x) = x^2 + 2x - 3$ , find  $f(x+3) - f(3)$ .



7. Find the range of the function:

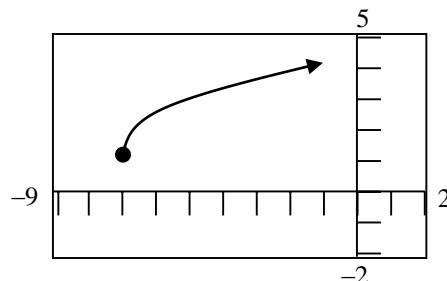
8. Determine the open intervals in which the function is increasing, decreasing, or constant.



9. Identify the type of symmetry for each function:

a)  $y = x^2 + 5$       b)  $2x^2 + xy - 4 = 0$       c)  $x^5 - 2x^3 - y = 0$

10. The graph at the right is a transformation of the graph of  $f(x) = \sqrt{x}$ . Find an equation for the function.



11. Given  $f(x) = 2x^2 - 5$  and  $g(x) = 3 - x$ , find  $(f \circ g)(x)$ .

12. Algebraically, determine if the functions are inverses of each other.

$$f(x) = \frac{2x+5}{3} \quad g(x) = \frac{3x-5}{2}$$

13. a) Given  $f(x) = \frac{1}{2}x^2 + 3$ , find  $f^{-1}(x)$ . b) Given  $g(x) = (x-4)^3$ , find the inverse of the function.

14. If  $f(x) = x^2 + 6x + 9$ , then find  $\frac{f(x+c) - f(c)}{c}$ ,  $x \neq 0$ .

15. For the function  $f(x) = x^2 + x - 6$ , determine:

- (a) whether  $f(x)$  is even, odd, or neither
- (b) the intervals for which  $f(x) \geq 0$ .

16. Determine the domain of the function:  $f(x) = \frac{8}{x^2 - 9}$

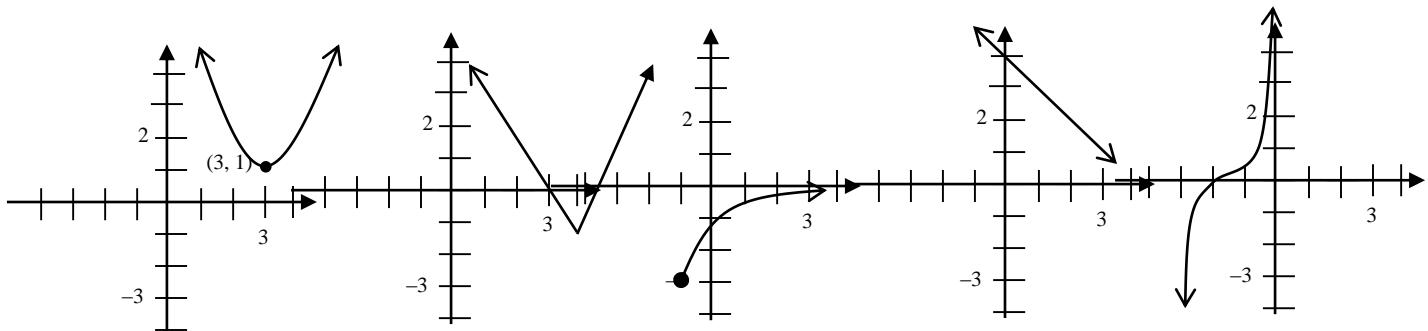
17. Graph:  $f(x) = \begin{cases} (x-3)^2, & x \leq 4 \\ -x, & x > 4 \end{cases}$

18. Given  $f(x) = x^2$  and  $g(x) = 2x - 7$ , find the following:  $f + g$ ,  $fg$ , and  $(f - g)(5)$ .

Precalculus Chapter 1 Test Review Solutions

1. Graph each equation:

a)  $y = (x - 3)^2 + 1$       b)  $y = |x - 4| - 1$       c)  $y = \sqrt{x + 1} - 3$       d)  $y = -x + 4$       e)  $y = (x + 2)^3$



2.  $-1$

3. a)  $y = \frac{1}{3}x - 4$       b)  $y = \frac{3}{5}x - 8$

4. \$584,000

5. a, b, and c

6.  $x^2 + 8x$

7.  $[-2, \infty)$

8. Increasing:  $(-2, 0)$ ; Decreasing:  $(-\infty, -2)$ ,  $(0, \infty)$

9. a) y-axis    b) origin    c) origin

10.  $f(x) = \sqrt{x + 7} + 1$

11.  $2x^2 - 12x + 13$

12.  $f(g(x)) = x$ , so yes.

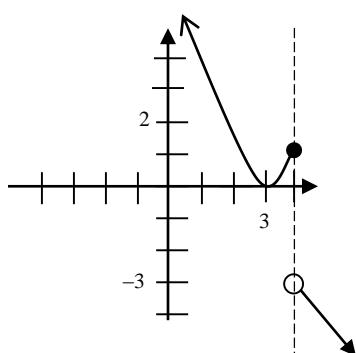
13. a)  $y = \pm\sqrt{2x - 6}$     b)  $y = \sqrt[3]{x} + 4$

14.  $2x + c + 6$

15. a) neither    b)  $x \leq -3$  and  $x \geq 2$

16. ARN:  $x \neq \pm 3$

17.



18.  $f + g = x^2 + 2x - 7$ ;  $fg = 2x^3 - 7x^2$ ;  $(f - g)(5) = 22$