

Note: Use a graphing calculator to check your graphs.

**A. Monomials**

1.  $-\frac{10}{h^3}$

2.  $\frac{3x^{7n-1}}{2}$

3.  $\frac{-27x^{10}y^{10}}{4}$

4.  $\frac{x^6y^5}{72}$

5.  $\frac{1}{2}$

6.  $\frac{25}{9x^2y^6}$

7. (a)  $\left\{\frac{3}{4}\right\}$  (b)  $\{-1\}$

8.  $\frac{1}{8}$

9. 3125

10.  $\frac{256}{81}$

## **B. Factoring**

1.  $(10a + 3b)(10a - 3b)$
2.  $(5r - 1)(2r + 3)$
3.  $3p^2(p - 6)(p + 5)$
4.  $(x^2 + 4)(x + 2)(x - 2)$
5.  $3pq(a + 6b)(a - 5b)$
6.  $(7z + 4)(7z - 4)$
7. prime
8.  $(x - 10)(x^2 + 10x + 100)$
9.  $(6b + 1)(b - 3)$
10.  $(x - 8)(x + 2)$
11.  $3mn(3m + 2n)(2m - n)$
12.  $(2t + 11u)(3t - 7u)$
13.  $(2p + 5q)(p + 3q)$
14.  $8(5p - 4r)$
15.  $9m(2m^2 + m - 5)$
16.  $(2x + 7r)^2$
17.  $2(3m - 10)(9m^2 + 30m + 100)$
18.  $(m - 2)(n + 5)$
19.  $(2a + 1)(a - 4)$
20.  $(x - 9)(q + r)$
21.  $3(a - 2)(a^2 + 2a + 4)$
22. prime
23.  $(x^2 + 25)(x + 5)(x - 5)$
24.  $(4x + q)(3x - 5q)$

### C. Linear Equations and Inequalities

1.  $\frac{5}{3}$

2.  $-8$

3.  $\frac{5}{7}$

4.  $\frac{5}{3}$

5. undefined

6.  $\frac{1}{2}$

7–16 Graphs (Check on calculator. Remember to shade for #s 15 and 16!)

17.  $y = -5x - 8$

18.  $y = \frac{3}{4}x - 2$

19.  $y = 5$

20.  $x = 2$

21.  $y = -3x - 21$

22.  $4x + 7y = -39$

23.  $f(x) = 2x + 11$

### D. Quadratic Equations, Inequalities, and Functions

1.  $\left\{0, \frac{1}{3}\right\}$

2.  $-10 \pm 2i\sqrt{15}$

3.  $0, -2 \pm 2\sqrt{3}$

4.  $\pm\sqrt{2}$

5.  $\left\{-\frac{5}{4}, 2\right\}$

6.  $\left\{\frac{4 \pm 3\sqrt{2}}{3}\right\}$

7.  $\left(-\infty, -\frac{8}{5}\right) \cup \left(\frac{8}{5}, \infty\right)$

8.  $\left(-\infty, -\frac{5}{2}\right] \cup 0, 1$

9 – 16 Use calculator to check graphs. Other answers are given below.

9. Vertex: (0, 3)  
Axis of Symmetry:  $x = 0$   
Domain:  $(-\infty, \infty)$   
Range:  $(-\infty, 3]$   
x-intercepts:  $\pm\sqrt{3}$   
y-intercept: 3

10. Vertex: (-1, 0)  
Axis of Symmetry:  $x = -1$   
Domain:  $(-\infty, \infty)$   
Range:  $(-\infty, 0]$   
x-intercept: -1  
y-intercept: -2

11. Vertex: (-1, 2)  
Axis of Symmetry:  $x = -1$   
Domain:  $(-\infty, \infty)$   
Range:  $[2, \infty)$   
x-intercepts: none  
y-intercept: 3

12. Vertex: (2, 1)  
Axis of Symmetry:  $x = 2$   
Domain:  $(-\infty, \infty)$   
Range:  $(-\infty, 1]$   
x-intercepts: 1; 3  
y-intercept: -3

13. Vertex: (-2, 9)  
Axis of Symmetry:  $x = -2$   
Domain:  $(-\infty, \infty)$   
Range:  $(-\infty, 9]$   
x-intercepts:  $\frac{-4 \pm 3\sqrt{2}}{2}$   
y-intercept: 1

14. Vertex:  $(-3, -4)$   
 Axis of Symmetry:  $x = -3$   
 Domain:  $(-\infty, \infty)$   
 Range:  $[-4, \infty)$   
 x-intercepts:  $-5; -1$   
 y-intercept:  $5$

15. Vertex:  $\left(\frac{1}{2}, \frac{1}{4}\right)$   
 Axis of Symmetry:  $x = \frac{1}{2}$   
 Domain:  $(-\infty, \infty)$   
 Range:  $\left(-\infty, \frac{1}{4}\right]$   
 x-intercepts:  $0; 1$   
 y-intercept:  $0$

16. Vertex:  $(3, -1)$   
 Axis of Symmetry:  $x = 3$   
 Domain:  $(-\infty, \infty)$   
 Range:  $[-1, \infty)$   
 x-intercepts:  $2; 4$   
 y-intercept:  $8$

**E. Trigonometry**

1. (a)  $\frac{1}{2}$       (b)  $\frac{\sqrt{2}}{2}$       (c)  $\sqrt{3}$       (d)  $2$       (e)  $\sqrt{2}$  (f)  $\sqrt{3}$

2. (a)  $-\frac{\sqrt{3}}{2}$       (b)  $-\frac{\sqrt{2}}{2}$       (c)  $-\sqrt{3}$       (d)  $-\frac{2\sqrt{3}}{3}$       (e) undefined (f)  $-\sqrt{3}$

(g)  $\frac{\sqrt{3}}{2}$       (h)  $-\frac{\sqrt{3}}{2}$       (i)  $0$       (j)  $-1$       (k)  $1$       (l)  $0$       (m)  $1$       (n)  $-1$       (o)  $0$

Use calculator to check graphs.

