

## Section 8.3

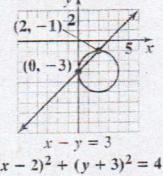
## Check Point Exercises

1.  $\frac{2}{x-3} + \frac{3}{x+4}$     2.  $\frac{2}{x} - \frac{2}{x-1} + \frac{3}{(x-1)^2}$     3.  $\frac{2}{x+3} + \frac{6x-8}{x^2+x+2}$     4.  $\frac{2x}{x^2+1} + \frac{-x+3}{(x^2+1)^2}$

## Exercise Set 8.3

1.  $\frac{A}{x-2} + \frac{B}{x+1}$
2.  $\frac{A}{x-1} + \frac{B}{x+3}$
3.  $\frac{A}{x+2} + \frac{B}{x-3} + \frac{C}{(x-3)^2}$
4.  $\frac{A}{x+1} + \frac{B}{x-2} + \frac{C}{(x-2)^2}$
5.  $\frac{A}{x-1} + \frac{Bx+C}{x^2+1}$
6.  $\frac{A}{x-4} + \frac{Bx+C}{x^2+5}$
7.  $\frac{Ax+B}{x^2+4} + \frac{Cx+D}{(x^2+4)^2}$
8.  $\frac{Ax+B}{x^2+7} + \frac{Cx+D}{(x^2+7)^2}$
9.  $\frac{3}{x-3} - \frac{2}{x-2}$
10.  $\frac{1}{x-1} - \frac{1}{x}$
11.  $\frac{7}{x-9} - \frac{4}{x+2}$
12.  $\frac{3}{x-2} + \frac{2}{x+1}$
13.  $\frac{24}{7(x-4)} + \frac{25}{7(x+3)}$
14.  $\frac{6}{x-3} + \frac{3}{x+5}$
15.  $\frac{4}{7(x-3)} - \frac{8}{7(2x+1)}$
16.  $\frac{3}{4(x+3)} + \frac{1}{4(x-1)}$
17.  $\frac{3}{x} + \frac{2}{x-1} - \frac{1}{x+3}$
18.  $\frac{3}{x} - \frac{1}{x+1} + \frac{2}{x-5}$
19.  $\frac{3}{x} + \frac{4}{x+1} - \frac{3}{x-1}$
20.  $\frac{3}{x} - \frac{5}{x-2} + \frac{4}{x+2}$
21.  $\frac{6}{x-1} - \frac{5}{(x-1)^2}$
22.  $\frac{1}{x+1} - \frac{1}{(x+1)^2}$
23.  $\frac{1}{x-2} - \frac{2}{(x-2)^2} - \frac{5}{(x-2)^3}$
24.  $\frac{2}{x+1} + \frac{4}{(x+1)^2} - \frac{3}{(x+1)^3}$
25.  $\frac{7}{x} - \frac{6}{x-1} + \frac{10}{(x-1)^2}$
26.  $\frac{1}{x} + \frac{2}{x+7} - \frac{28}{(x+7)^2}$
27.  $\frac{1}{4(x+1)} + \frac{3}{4(x-1)} + \frac{1}{2(x-1)^2}$
28.  $-\frac{1}{4(x+1)} + \frac{1}{4(x-1)} + \frac{1}{4(x+1)^2} + \frac{1}{4(x-1)^2}$
29.  $\frac{3}{x-1} + \frac{2x-4}{x^2+1}$
30.  $\frac{3}{x-4} + \frac{2x-1}{x^2+5}$
31.  $\frac{2}{x+1} + \frac{3x-1}{x^2+2x+2}$
32.  $\frac{2}{x-2} - \frac{2x-1}{x^2+2x+2}$
33.  $\frac{1}{4x} + \frac{1}{x^2} - \frac{x+4}{4(x^2+4)}$
34.  $\frac{14}{3(x-1)} + \frac{4}{(x-1)^2} - \frac{14x-4}{3(x^2+2)}$
35.  $\frac{4}{x+1} + \frac{2x-3}{x^2+1}$
36.  $\frac{3}{x+2} - \frac{2}{x^2+4}$
37.  $\frac{x+1}{x^2+2} - \frac{2x}{(x^2+2)^2}$
38.  $\frac{1}{x^2+4} + \frac{2x-1}{(x^2+4)^2}$
39.  $\frac{x-2}{x^2-2x+3} + \frac{2x+1}{(x^2-2x+3)^2}$
40.  $\frac{3x}{x^2-2x+2} + \frac{x-2}{(x^2-2x+2)^2}$
41.  $\frac{3}{x-2} + \frac{x-1}{x^2+2x+4}$
42.  $-\frac{2}{3(x-1)} + \frac{2x+13}{3(x^2+x+1)}$
43.  $x^3 + x - \frac{1}{2(x+1)} + \frac{3}{2(x-1)}$
44.  $x^3 + 4x^2 + 12x + 32 + \frac{80}{x-2} + \frac{32}{(x-2)^2}$
45.  $x+1 - \frac{2}{x} - \frac{2}{x^2} + \frac{2}{x-1}$
46.  $x^2 + 3x + 1 + \frac{5}{x-2} + \frac{3}{x+1}$
47.  $\frac{\frac{1}{2c}}{x-c} - \frac{\frac{1}{2c}}{x+c}$
48.  $\frac{\frac{ac+b}{2c}}{x-c} + \frac{\frac{ac-b}{2c}}{x+c}$
49.  $\frac{a}{x-c} + \frac{ac+b}{(x-c)^2}$
50.  $\frac{\frac{1}{a-b}}{x-a} + \frac{\frac{1}{b-a}}{x-b}$
51.  $\frac{1}{x} - \frac{1}{x+1}, \frac{99}{100}$
52.  $\frac{1}{x} - \frac{1}{x+2}, \frac{100}{101}$
60. does not make sense
61. does not make sense
62. does not make sense
63. does not make sense
65.  $\frac{2}{x-3} + \frac{2x+5}{x^2+3x+3}$
66.  $\{(2.5, -2)\}$
67.  $\{(4, -3)\}$

68. ;  $(0, -3)$  and  $(2, -1)$ ;  $0 - (-3) = 3$  and  $(0 - 2)^2 + (-3 + 3)^2 = 4$  are true;  
 $2 - (-1) = 3$  and  $(2 - 2)^2 + (-1 + 3)^2 = 4$  are true.



## Section 8.4

## Check Point Exercises

1.  $\{(0, 1), (4, 17)\}$
2.  $\left\{ \left( -\frac{6}{5}, \frac{3}{5} \right), (2, -1) \right\}$
3.  $\{(3, 2), (3, -2), (-3, 2), (-3, -2)\}$
4.  $\{(0, 5)\}$
5. length: 7 ft; width: 3 ft or length: 3 ft; width: 7 ft

## Exercise Set 8.4

1.  $\{(-3, 5), (2, 0)\}$
2.  $\{(0, 1), (1, 2)\}$
3.  $\{(1, 1), (2, 0)\}$
4.  $\{(-6, 7), (-2, -1)\}$
5.  $\{(4, -10), (-3, 11)\}$
6.  $\{(-3, 2)\}$
7.  $\{(4, 3), (-3, -4)\}$
8.  $\{(2, 1), (1, -2)\}$
9.  $\left\{ \left( -\frac{3}{2}, -4 \right), (2, 3) \right\}$
10.  $\{(-2, 6), (-12, 1)\}$
11.  $\{(-5, -4), (3, 0)\}$
12.  $\{(3, -5), (-1, 3)\}$
13.  $\{(3, 1), (-3, -1), (1, 3), (-1, -3)\}$
14.  $\{(2, 2), (-2, -2)\}$
15.  $\{(4, -3), (-1, 2)\}$
16.  $\{(-6, 3), (-2, -1)\}$
17.  $\{(0, 1), (4, -3)\}$
18.  $\left\{ \left( \frac{1}{5}, \frac{18}{5} \right), (1, 2) \right\}$
19.  $\{(3, 2), (3, -2), (-3, 2), (-3, -2)\}$
20.  $\{(1, 0), (-1, 0)\}$
21.  $\{(3, 2), (3, -2), (-3, 2), (-3, -2)\}$
22.  $\{(1, 2), (1, -2), (-1, 2), (-1, -2)\}$
23.  $\{(2, 1), (2, -1), (-2, 1), (-2, -1)\}$
24.  $\{(\sqrt{5}, \sqrt{2}), (-\sqrt{5}, \sqrt{2}), (-\sqrt{5}, -\sqrt{2}), (\sqrt{5}, -\sqrt{2})\}$
25.  $\{(3, 4), (3, -4)\}$
26.  $\left\{ \left( \frac{\sqrt{31}}{4}, \frac{7}{4} \right), \left( -\frac{\sqrt{31}}{4}, \frac{7}{4} \right) \right\}$
27.  $\{(0, 2), (0, -2), (-1, \sqrt{3}), (-1, -\sqrt{3})\}$
28.  $\{(0, -4), (2\sqrt{3}, 2), (-2\sqrt{3}, 2)\}$
29.  $\{(2, 1), (2, -1), (-2, 1), (-2, -1)\}$
30.  $\{(4, 0), (-3, \sqrt{7}), (-3, -\sqrt{7})\}$
31.  $\{(-2\sqrt{2}, -\sqrt{2}), (-1, -4), (1, 4), (2\sqrt{2}, \sqrt{2})\}$
32.  $\{(-2, -2), (2, 2), (4, 1), (-4, -1)\}$
33.  $\{(2, 2), (4, 1)\}$
34.  $\left\{ (1, 1), \left( \frac{19}{29}, -\frac{11}{29} \right) \right\}$
35.  $\{(0, 0), (-1, 1)\}$
36.  $\{(0, 0), (-2, 8)\}$
37.  $\{(0, 0), (-2, 2), (2, 2)\}$
38.  $\{(2, 2), (2, 4)\}$
39.  $\left\{ (-4, 1), \left( -\frac{5}{2}, \frac{1}{4} \right) \right\}$
40.  $\{(0, -3), (2, 1)\}$
41.  $\left\{ \left( \frac{12}{5}, -\frac{29}{5} \right), (-2, 3) \right\}$