79. $\frac{4}{2x^2} + \frac{1}{3x} = \frac{4}{2x^2}\left(\frac{3}{3}\right) + \frac{1}{3x}\left(\frac{2x}{2x}\right)$

$= \frac{12 + 2x}{6x^2}$

$= \frac{6 + x}{3x^2}$

$= \frac{x + 6}{3x^2}$

80. $\frac{11}{4(x - 5)} - \frac{x + 1}{4x} = \frac{11x}{4(x - 5)x} - \frac{(x + 1)(x - 5)}{4x(x - 5)}$

$= \frac{11x - [x^2 - 4x - 5]}{4x^2 - 20x}$

$= \frac{11x - x^2 + 4x + 5}{4x^2 - 20x}$

$= \frac{-x^2 + 15x + 5}{4x^2 - 20x}$

81. $\frac{3x}{x^2} - \frac{x - 1}{x + 3} = \frac{3x(x + 3) - x^2(x - 1)}{x^3 + 3x^2}$

$= \frac{3x^2 + 9x - x^3 + x^2}{x^3 + 3x^2}$

$= \frac{-x^3 + 4x^2 + 9x}{x^3 + 3x^2}$

$= \frac{x(-x^2 + 4x + 9)}{x(x^2 + 3x)}$

$= \frac{-x^2 + 4x + 9}{x^2 + 3x}$

82. $\frac{2}{3x + 2} + \frac{5x^2}{x - 4} = \frac{2}{3x + 2}\left(\frac{x - 4}{x - 4}\right) + \frac{5x^2}{x - 4}\left(\frac{3x + 2}{3x + 2}\right)$

$= \frac{2x - 8 + 15x^3 + 10x^2}{(3x + 2)(x - 4)}$

$= \frac{15x^3 + 10x^2 + 2x - 8}{(3x + 2)(x - 4)}$

83. $\frac{1 - 3x}{x - 6} + \frac{2}{2x + 1} = \frac{1 - 3x}{x - 6}\left(\frac{2x + 1}{2x + 1}\right) + \frac{2}{2x + 1}\left(\frac{x - 6}{x - 6}\right)$

$= \frac{2x + 1 - 6x^2 - 3x + 2x - 12}{(x - 6)(2x + 1)}$

$= \frac{-6x^2 + x - 11}{(x - 6)(2x + 1)}$

Lesson 10.2

10.2 Guided Practice (p. 598)

1. focus; directrix
2. The graph of $y = ax^2$ rotated 90° clockwise is the graph of $x = ay^2$.

3. $y = ax^2$

$x^2 = \frac{1}{a}y$

$4p = \frac{1}{a}$

$p = \frac{1}{4a}$

focus: $\left(0, \frac{1}{4a}\right)$

directrix: $y = -\frac{1}{4a}$

4. $x^2 = 4y$

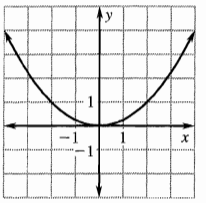
$4p = 4$

$p = 1$

focus: $(0, 1)$

directrix: $y = -1$

$p > 1$ parabola opens up only positive y values



x	±2	±2.83	±3.46
y	1	2	3

5. $y = -5x^2$

$-\frac{1}{5}y = x^2$

$x^2 = -\frac{1}{5}y$

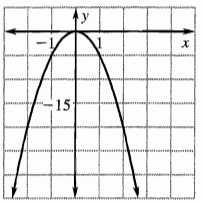
$4p = -\frac{1}{5}$

$p = -\frac{1}{20}$

focus: $\left(0, -\frac{1}{20}\right)$

directrix: $y = \frac{1}{20}$

$p < 0$ parabola opens down, only negative y-values



x	−1	−2	−3	4
y	±0.45	±0.63	±0.77	±0.89

6. $-12x = y^2$

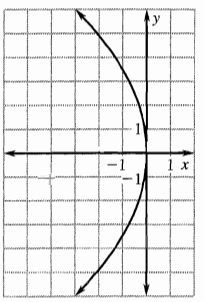
$4p = -12$

$p = -\frac{12}{4} = -3$

focus: $(-3, 0)$

directrix is $x = 3$

$p < 0$ parabola opens left, only negative x-values



x	−1	−2	−3	−4
y	±3.46	±4.90	±6	±6.93

7. $8y^2 = x$

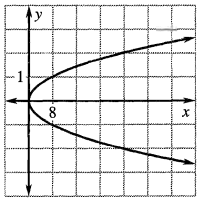
$y^2 = \frac{1}{8}x$

$4p = \frac{1}{8}$

$p = \frac{1}{32}$

focus: $\left(\frac{1}{32}, 0\right)$

directrix: $x = -\frac{1}{32}$



$p > 0$ parabola opens right, only positive x-values

x	1	2	3	4	5
y	±0.35	±0.5	±0.61	±0.71	±0.79

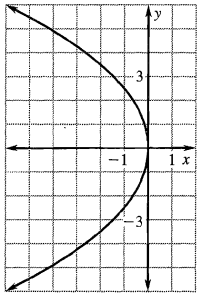
8. $-6x = y^2$

$4p = -6$

$p = -\frac{3}{2}$

focus: $\left(-\frac{3}{2}, 0\right)$

directrix: $x = \frac{3}{2}$



$p < 0$ parabola opens left, only negative x-values

x	−1	−2	−3	−4	−5
y	±2.45	±3.46	±4.24	±4.90	±5.48

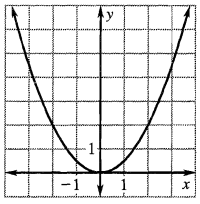
9. $x^2 = 2y$

$4p = 2$

$p = \frac{1}{2}$

focus: $\left(0, \frac{1}{2}\right)$

directrix: $y = -\frac{1}{2}$



$p > 0$ parabola opens up, only positive y-values

x	1	2	3	4	5
y	±1.41	±2	±2.45	±2.83	±3.16

10. focus: $(0, 3)$

focus: $(0, p)$; $x^2, p = 3$

directrix: $y = -p = -3$

$x^2 = 4py$

$x^2 = 4(3)y$

$x^2 = 12y$

11. focus: $(5, 0)$

focus: $(p, 0)$; $y^2, p = 5$

directrix: $x = -p = -5$

$y^2 = 4px$

$y^2 = 4(5)x$

$y^2 = 20x$

12. focus: $(-6, 0)$

focus: $(p, 0)$; $y^2, p = -6$

directrix: $x = -p = 6$

$y^2 = 4px$

$y^2 = 4(-6)x$

$y^2 = -24x$

13. directrix: $x = 4$,

$x = -p$,

$p = -4$

focus: $(4, 0)$

$y^2 = 4px$

$y^2 = 4(-4)x$

$y^2 = -16x$

14. directrix: $x = -1$,

$x = -p, p = 1$

focus: $(1, 0)$

$y^2 = 4px$

$y^2 = 4(1)x$

$y^2 = 4x$

15. directrix: $y = 8$,

$y = -p, p = -8$

focus: $(0, -8)$

$x^2 = 4py$

$x^2 = 4(-8)y$

$x^2 = -32y$

10.2 Practice and Applications (pp. 598–600)

16. $y^2 = 4x$ D **17.** $x^2 = -4y$ B **18.** $x^2 = 4y$ A

19. $y^2 = -4x$ E **20.** $y^2 = \frac{1}{4}x$ F **21.** $x^2 = \frac{1}{4}y$ C

22. $y = -3x^2$

$-\frac{1}{3}y = x^2$

$-\frac{1}{3} = 4p$

$-\frac{1}{12} = p$

$p < 0$ parabola opens down

23. $-9x^2 = 2y$

$x^2 = -\frac{2}{9}y$

$4p = -\frac{2}{9}$

$p = -\frac{2}{9}\left(\frac{1}{4}\right)$

$= -\frac{2}{36} = -\frac{1}{18}$

$p < 0$ parabola opens down

24. $2y^2 = -6x$

$y^2 = -3x$

$4p = -3$

$p = -\frac{3}{4}$

$p < 0$ parabola opens left

25. $x = 7y^2$

$\frac{1}{7}x = y^2$

$\frac{1}{7} = 4p$

$\frac{1}{28} = p$

$p > 0$ parabola opens right

26. $x^2 = 16y$

$4p = 16$

$p = 4$

$p > 0$ parabola opens up

27. $-3y^2 = 8x$

$y^2 = -\frac{8}{3}x$

$4p = -\frac{8}{3}$

$p = -\frac{8}{12} = -\frac{2}{3}$

$p < 0$ parabola opens left

28. $-5x = -y^2$

$5x = y^2$

$5 = 4p$

$\frac{5}{4} = p$

$p > 0$ parabola opens right

29. $x^2 = \frac{4}{3}y$

$4p = \frac{4}{3}$

$p = \frac{4}{12} = \frac{1}{4}$

$p > 0$ parabola opens up

30. $3x^2 = -y$

$x^2 = -\frac{1}{3}y$

$4p = -\frac{1}{3}$

$p = -\frac{1}{12}$

focus: $\left(0, -\frac{1}{12}\right)$

directrix: $y = \frac{1}{12}$

31. $2y^2 = x$

$y^2 = \frac{1}{2}x$

$4p = \frac{1}{2}$

$p = \frac{1}{8}$

focus: $\left(\frac{1}{8}, 0\right)$

directrix: $x = -\frac{1}{8}$

2 $x^2 = 8y$

$4p = 8$

$p = 2$

focus: $(0, 2)$

directrix: $y = -2$

4 $y^2 = -16x$

$4p = -16$

$p = -4$

focus: $(-4, 0)$

directrix: $x = 4$

$-4x + 9y^2 = 0$

$9y^2 = 4x$

$y^2 = \frac{4}{9}x$

$4p = \frac{4}{9}$

$p = \frac{4}{36} = \frac{1}{9}$

focus: $\left(\frac{1}{9}, 0\right)$

directrix: $x = -\frac{1}{9}$

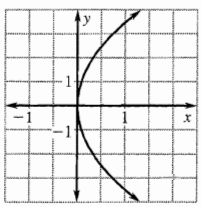
$y^2 = 12x$

$4p = 12$

$p = 3$

focus: $(3, 0)$

directrix: $x = -3$



$p > 0$ parabola opens right, only positive x-values

x	1	2	3	4
y	±3.46	±4.90	±6	±6.9

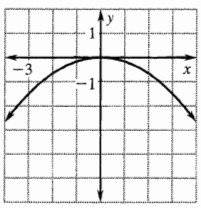
$x^2 = -6y$

$4p = -6$

$p = -\frac{3}{2}$

focus: $\left(0, -\frac{3}{2}\right)$

directrix: $y = \frac{3}{2}$



$p < 0$ parabola opens down, only negative y-values

x	−1	−2	−3	−4	−5
y	±2.45	±3.46	±4.24	±4.9	±5.48

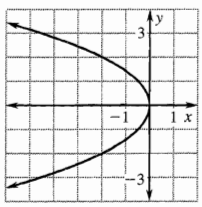
$y^2 = -2x$

$4p = -2$

$p = -\frac{1}{2}$

focus: $\left(-\frac{1}{2}, 0\right)$

directrix: $x = \frac{1}{2}$



$p < 0$ parabola opens left, only negative x-values

x	−1	−2	−3	−4	−5
y	±1.41	2	±2.45	±2.83	±3.16

33. $y^2 = -10x$

$4p = -10$

$p = -\frac{10}{4} = -\frac{5}{2}$

focus: $\left(-\frac{5}{2}, 0\right)$

directrix: $x = \frac{5}{2}$

35. $x^2 = -36y$

$4p = -36$

$p = -9$

focus: $(0, -9)$

directrix: $y = 9$

37. $-28y + x^2 = 0$

$x^2 = 28y$

$4p = 28$

$p = 7$

focus: $(0, 7)$

directrix: $y = -7$

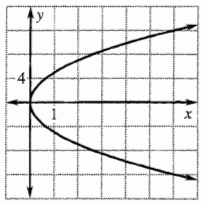
41. $y^2 = 24x$

$4p = 24$

$p = 6$

focus: $(6, 0)$

directrix: $x = -6$



$p > 0$ parabola opens right, only positive x-values

x	1	2	3	4
y	±4.90	±6.93	±8.49	±9.80

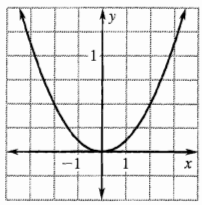
42. $x^2 = 8y$

$4p = 8$

$p = 2$

focus: $(0, 2)$

directrix: $y = -2$



$p > 0$ parabola opens up, only positive y-values

x	1	2	3
y	±2.83	±4	±4.90

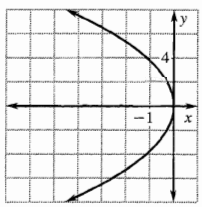
43. $y^2 = -14x$

$4p = -14$

$p = -\frac{14}{4} = -\frac{7}{2}$

focus: $\left(-\frac{7}{2}, 0\right)$

directrix: $x = \frac{7}{2}$



$p < 0$ parabola opens left, only negative x-values

x	−1	−2	−3
y	±3.74	±5.29	±6.48

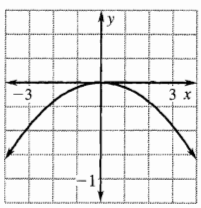
44. $x^2 = -20y$

$4p = -20$

$p = -5$

focus: $(0, -5)$

directrix: $y = 5$



$p < 0$ parabola opens down, only y-values

x	−1	−2	−3	−4	−5
y	±4.47	±6.32	±7.75	±8.94	±10

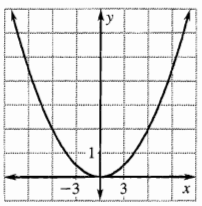
45. $x^2 = 18y$

$4p = 18$

$p = \frac{18}{4} = \frac{9}{2}$

focus: $\left(0, \frac{9}{2}\right)$

directrix: $y = -\frac{9}{2}$



$p > 0$ parabola opens up, only y-values

x	1	2	3	4	5
y	±4.24	±6	±7.35	±8.49	±9.49

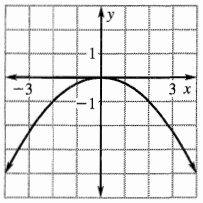
46. $x^2 = -4y$

$4p = -4$

$p = -1$

focus: $(0, -1)$

directrix: $y = 1$



$p < 0$ parabola opens down, only negative y-values

x	1	2	3
y	±2	±2.83	±3.46

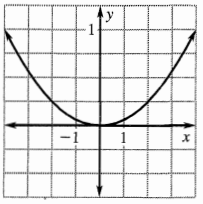
47. $x^2 = 16y$

$4p = 16$

$p = 4$

focus: $(0, 4)$

directrix: $y = -4$



$p > 0$ parabola opens up, only positive y-values

x	1	2	3	4
y	±4	±5.66	±6.93	±8

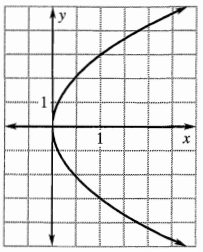
48. $y^2 = 9x$

$4p = 9$

$p = \frac{9}{4}$

focus: $\left(\frac{9}{4}, 0\right)$

directrix: $x = -\frac{9}{4}$



$p > 0$ parabola opens right, only positive x-values

x	1	2	3
y	±3	±4.24	±5.20

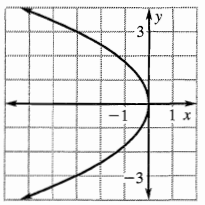
49. $y^2 = -3x$

$4p = -3$

$p = -\frac{3}{4}$

focus: $\left(-\frac{3}{4}, 0\right)$

directrix: $x = \frac{3}{4}$



$p < 0$ parabola opens left, only negative x-values

x	−1	−2	−3
y	±1.73	±2.45	±3

50. $x^2 - 40y = 0$

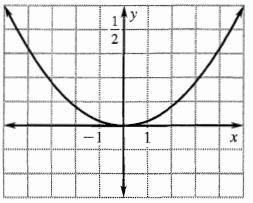
$x^2 = 40y$

$4p = 40$

$p = 10$

focus: $(0, 10)$

directrix: $y = -10$



$p > 0$ parabola opens up, only positive y values

x	10	20	30	40	50
y	±20	±28.28	±34.64	±40	±44.72

51. $x + \frac{1}{20}y^2 = 0$

$\frac{1}{20}y^2 = -x$

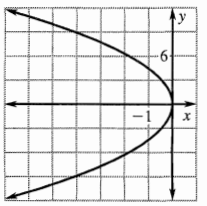
$y^2 = -20x$

$4p = -20$

$p = -5$

focus: $(-5, 0)$

directrix: $x = 5$



$p < 0$ parabola opens left, only negative x-values

x	−1	−2	−3	4
y	±4.47	±6.32	±7.75	±8.94

52. $3x^2 = 4y$

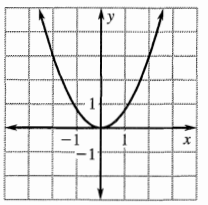
$x^2 = \frac{4}{3}y$

$4p = \frac{4}{3}$

$p = \frac{4}{12} = \frac{1}{3}$

focus: $\left(0, \frac{1}{3}\right)$

directrix: $y = -\frac{1}{3}$



$p > 0$ parabola opens up, only positive y-values

x	1	2	3
y	$\pm\frac{4}{3}$	$\pm\frac{8}{3}$	$\pm\frac{12}{3} = 4$

53. $x - \frac{1}{8}y^2 = 0$

$-\frac{1}{8}y^2 = -x$

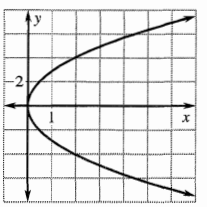
$y^2 = 8x$

$4p = 8$

$p = 2$

focus: $(2, 0)$

directrix: $x = -2$



$p > 0$, parabola opens to the right, only positive x-values

x	1	2	3
y	±2.83	4	±4.90

54. $(4, 0)$ $p = 4$

$y^2 = 4px$

$y^2 = 4(4)x$

$y^2 = 16x$

55. $(-2, 0)$ $p = -2$

$y^2 = 4px$

$y^2 = 4(-2)x$

$y^2 = -8x$

56. $(-3, 0)$ $p = -3$

$y^2 = 4px$

$y^2 = 4(-3)x$

$y^2 = -12x$

57. $(0, 1)$ $p = 1$

$x^2 = 4py$

$x^2 = 4(1)y$

$x^2 = 4y$

58. $(0, 4)\ p = 4$
$x^2 = 4py$
$x^2 = 4(4)y$
$x^2 = 16y$

59. $(0, -3)\ p = -3$
$x^2 = 4py$
$x^2 = 4(-3)y$
$x^2 = -12y$

60. $(0, -4)\ p = -4$
$x^2 = 4py$
$x^2 = 4(-4)y$
$x^2 = -16y$

61. $(-5, 0)\ p = -5$
$y^2 = 4px$
$y^2 = 4(-5)x$
$y^2 = -20x$

62. $\left(-\frac{1}{4}, 0\right)\ p = -\frac{1}{4}$
$y^2 = 4px$
$y^2 = 4\left(\frac{1}{4}\right)x$
$y^2 = -x$

63. $\left(0, -\frac{3}{8}\right)\ p = -\frac{3}{8}$
$x^2 = 4py$
$x^2 = 4\left(-\frac{3}{8}\right)y$
$x^2 = -\frac{12}{8}y = -\frac{3}{2}y$

64. $\left(0, \frac{1}{2}\right)\ p = \frac{1}{2}$
$x^2 = 4py$
$x^2 = 4\left(\frac{1}{2}\right)y$
$x^2 = 2y$

65. $\left(\frac{5}{12}, 0\right)\ p = \frac{5}{12}$
$y^2 = 4px$
$y^2 = 4\left(\frac{5}{12}\right)x$
$y^2 = \frac{20}{12}y = \frac{5}{3}x$

66. $y = 2\ p = -2$
$x^2 = 4py$
$x^2 = 4(-2)y$
$x^2 = -8y$

67. $y = -3\ p = 3$
$x^2 = 4py$
$x^2 = 4(3)y$
$x^2 = 12y$

68. $x = -4\ p = 4$
$y^2 = 4px$
$y^2 = 4(4)x$
$y^2 = 16x$

69. $x = 6\ p = -6$
$y^2 = 4px$
$y^2 = 4(-6)x$
$y^2 = -24x$

70. $x = -5\ p = 5$
$y^2 = 4px$
$y^2 = 4(5)x$
$y^2 = 20x$

71. $y = -1\ p = 1$
$x^2 = 4py$
$x^2 = 4(1)y$
$x^2 = 4y$

72. $x = 2\ p = -2$
$y^2 = 4px$
$y^2 = 4(-2)x$
$y^2 = -8x$

73. $y = 4\ p = -4$
$x^2 = 4py$
$x^2 = 4(-4)y$
$x^2 = -16y$

74. $x = -\frac{1}{2}\ p = \frac{1}{2}$
$y^2 = 4px$
$y^2 = 4\left(\frac{1}{2}\right)x$
$y^2 = 2x$

75. $x = \frac{3}{4}\ p = -\frac{3}{4}$
$y^2 = 4px$
$y^2 = 4\left(-\frac{3}{4}\right)x$
$y^2 = -3x$

76. $y = \frac{5}{8}\ p = -\frac{5}{8}$
$x^2 = 4py$
$x^2 = 4\left(-\frac{5}{8}\right)y$
$x^2 = -\frac{5}{2}y$

77. $y = -\frac{1}{12}\ p = \frac{1}{12}$
$x^2 = 4py$
$x^2 = 4\left(\frac{1}{12}\right)y$
$x^2 = \frac{1}{3}y$

78. $y = -4\ p = 4$
$x^2 = 4py$
$x^2 = 4(4)y$
$x^2 = 16y$
$(4)^2 = 16y$
$16 = 16y$
$\frac{16}{16} = y$
$y = 1$ ft

79. $x = -1.5$
$y^2 = 4px$
$y^2 = 4(1.5)x$
$y^2 = 6x$
$(3.5)^2 = 6x$
$12.25 = 6x$
2.04 inches $= x$

80. $y^2 = 4px$
$y^2 = 4(12)(6)$
$y^2 = 288$
$y = 16.97$
diameter $= 2(16.97)$
≈ 33.94 inches

81. $x^2 = 4py$
$(6)^2 = 4p(4)$
$36 = 16p$
$\frac{36}{16} = p$
2.25 in. $= p$

82. $y = ax^2,\ \frac{1}{a}y = x^2,\ 4p = \frac{1}{a},\ p = \frac{4}{a}$

focus: $\left(0, \frac{4}{a}\right)$

directrix: $y = -\frac{4}{a}$

As $|a|$ increases, focus and directrix move closer to the origin.

83. **a.** $y^2 = \frac{32}{7}x$
$4p = \frac{32}{7}$
$p = \frac{32}{28} = \frac{8}{7} = 1\frac{1}{7}$
depth is $1\frac{1}{2}$
$1\frac{1}{7} < 1\frac{1}{2}$

b. $y^2 = \frac{16}{7}\left(\frac{3}{1}\right)$
$y^2 = \frac{48}{7}$
$y = 2.62$
$2(2.62) \approx$ 5.2 inches

c. $y^2 = 6x$
$y^2 = 6\left(\frac{3}{2}\right)$
$y^2 = 9$
$y = 3$
$2(3) =$ 6 inches

If not the bulb would extend outside of the flashlight.

d. $y^2 = 2x$
$y^2 = 2\left(\frac{3}{2}\right)$
$y^2 = 3$
$y \approx 1.73$
$2(1.73) \approx 3.46$ inches

84. $x^2 = 4py$, focus: $(0, p)$, directrix: $y = -p$
$\sqrt{x^2} = \sqrt{4py}$
$x = \sqrt{4py}$
$2x =$ width $=$ latus rectum $= 2\sqrt{4py}$
$2x = 2\sqrt{4py}$
$2x = 2(2)\sqrt{py}$ $\quad p = y$
$2x = 4\sqrt{p^2}$
$2x = 4p$

10.2 Mixed Review (p. 600)

85. $8^{5x} = 16^{2x+1}$

$(2^3)^{5x} = (2^4)^{2x+1}$

$(2)^{15x} = (2)^{8x+4}$

$15x = 8x + 4$

$7x = 4$

$x = \frac{4}{7}$

86. $3^x = 15$

$\log_3 15 = x$

$\frac{\log 15}{\log 3} = x$

$2.465 \approx x$

87. $5^x = 7$

$\log_5 7 = x$

$\frac{\log 7}{\log 5} = x$

$1.209 \approx x$

88. $10^{3x+1} + 4 = 33$

$10^{3x+1} = 29$

$\log 29 = 3x + 1$

$\log 29 - 1 = 3x$

$\frac{\log 29 - 1}{3} = x$

$0.154 \approx x$

89. $\log_7(3x - 5) = \log_7 8x$

$3x - 5 = 8x$

$-5 = 5x$

$-1 = x$

no solution

90. $\log_3(4x - 3) = 3$

$3^3 = 4x - 3$

$27 = 4x - 3$

$30 = 4x$

$\frac{30}{4} = x$

$\frac{15}{2} = x$

91. $\frac{3\cancel{x}y^3}{x^3\cancel{y}} \cdot \frac{\cancel{y}}{6\cancel{x}} = \frac{y^3}{2x^3}$

92. $\frac{3xy^3}{2x} \div \frac{2xy^3}{3x}$

$\frac{3\cancel{x}y^3}{2\cancel{x}} \cdot \frac{3\cancel{x}}{2x\cancel{y}^3} = \frac{9}{4}$

93. $\frac{x^2 - 9}{x^2 - x - 6} \cdot (x + 2) = \frac{\cancel{(x-3)}(x+3)}{\cancel{(x-3)}\cancel{(x+2)}} \cdot \frac{\cancel{(x+2)}}{1}$

$= x + 3$

94. $\frac{-3x}{x+2} + \frac{4x}{x-1} = \frac{-3x(x-1)}{(x+2)(x-1)} + \frac{4x(x+2)}{(x+2)(x-1)}$

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

$= \frac{x^2 + 11x}{(x+2)(x-1)}$

95. $\frac{x+1}{6x^2} - \frac{x+1}{6x^2 + 6x} = \frac{(x+1)\left(1 + \frac{1}{x}\right)}{6x^2\left(1 + \frac{1}{x}\right)} - \frac{x+1}{6x^2 + 6x}$

$= \frac{x + 1 + 1 + \frac{1}{x} - x - 1}{6x^2\left(1 + \frac{1}{x}\right)}$

$= \frac{1 + \frac{1}{x}}{6x^2\left(1 + \frac{1}{x}\right)} = \frac{1}{6x^2}$

96. $\frac{x^2 - 3x + 2}{x - 1} - \frac{x^2 - 4}{x - 2}$

$= \frac{(x^2 - 3x + 2)(x - 2) - (x^2 - 4)(x - 1)}{(x - 1)(x - 2)}$

$= \frac{x^3 - 3x^2 + 2x - 2x^2 + 6x - 4 - [x^3 - x^2 - 4x + 4]}{(x - 1)(x - 2)}$

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

$\frac{-4x^2 + 12x - 8}{(x - 1)(x - 2)} = \frac{-4(x^2 - 3x + 2)}{(x - 1)(x - 2)}$

$= \frac{-4\cancel{(x-2)}\cancel{(x-1)}}{\cancel{(x-1)}\cancel{(x-2)}} = -4$

97. $(3, 4), (6, 7)$

$d = \sqrt{(6 - 3)^2 + (7 - 4)^2} = \sqrt{9 + 9}$

$= \sqrt{18} = \sqrt{9(2)} = 3\sqrt{2} \approx 4.243$

98. $(-3, 7), (-7, 3)$

$d = \sqrt{(-7 + 3)^2 + (3 - 7)^2} = \sqrt{16 + 16}$

$= \sqrt{2(16)} = 4\sqrt{2} \approx 5.657$

99. $(18, -4), (-2, 9)$

$d = \sqrt{(-2 - 18)^2 + (9 + 4)^2}$

$= \sqrt{400 + 169} = \sqrt{569} \approx 23.854$

100. $(3.7, 5.1), (2, 5)$

$d = \sqrt{(2 - 3.7)^2 + (5 - 5.1)^2}$

$= \sqrt{2.89 + 0.01} = \sqrt{2.9} \approx 1.703$

101. $(-9, -31), (8, 7)$

$d = \sqrt{(8 + 9)^2 + (7 + 31)^2}$

$= \sqrt{289 + 1444} = \sqrt{1733} \approx 41.629$

102. $(8.8, 3.3), (1.2, 6)$

$d = \sqrt{(1.2 - 8.8)^2 + (6 - 3.3)^2}$

$= \sqrt{57.76 + 7.29} = \sqrt{65.05} \approx 8.065$

103. $A = 2.25$, $P = 1.5$, $\frac{A}{P} = x$

$\frac{2.25}{1.5} = 1.5$, $\frac{A}{P} = x$, $A = xp$, $A = 1.5p$

Lesson 10.3

10.3 Guided Practice (p. 604)

1. The set of all points (x, y) equidistant from a fixed point.
2. sometimes true
3. They are negative reciprocals of each other (except if one line is vertical).
4. The student failed to square the radius; $x^2 + y^2 = 16$