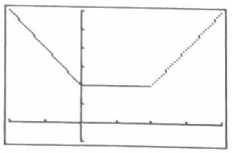
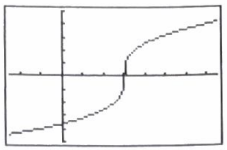
67. $y = |x| + |x - 10|$



68. $y = 8\sqrt[3]{x - 6}$



In Exercises 69–78, find the standard form of the equation of the specified circle.

69. Center: (0, 0); radius: 3

70. Center: (0, 0); radius: 5

71. Center: (2, −1); radius: 4

72. Center: $(0, \frac{1}{3})$; radius: $\frac{1}{3}$

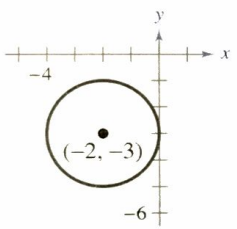
73. Center: (−1, 2); solution point: (0, 0)

74. Center: (3, −2); solution point: (−1, 1)

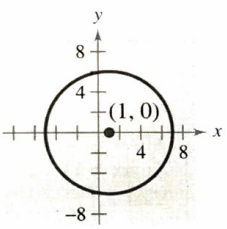
75. Endpoints of a diameter: (0, 0), (6, 8)

76. Endpoints of a diameter: (−4, −1), (4, 1)

77.



78.



In Exercises 79–84, find the center and radius, and sketch the graph of the equation.

79. $x^2 + y^2 = 4$

80. $x^2 + y^2 = 16$

81. $(x - 1)^2 + (y + 3)^2 = 4$

82. $x^2 + (y - 1)^2 = 1$

83. $\left(x - \frac{1}{2}\right)^2 + \left(y - \frac{1}{2}\right)^2 = \frac{9}{4}$

84. $(x - 2)^2 + (y + 1)^2 = 2$

In Exercises 85 and 86, use a graphing utility to graph y_1 and y_2. Use a square setting. Identify the graph.

85. $y_1 = \sqrt{9 - x^2}$
$y_2 = -\sqrt{9 - x^2}$

86. $y_1 = 2 + \sqrt{16 - (x - 1)^2}$
$y_2 = 2 - \sqrt{16 - (x - 1)^2}$

In Exercises 87–90, explain how to use a graphing utility to verify that $y_1 = y_2$. Identify the rule of algebra that is illustrated.

87. $y_1 = \frac{1}{4}(x^2 - 8)$
$y_2 = \frac{1}{4}x^2 - 2$

88. $y_1 = \frac{1}{2}x + (x + 1)$
$y_2 = \frac{3}{2}x + 1$

89. $y_1 = \frac{1}{5}[10(x^2 - 1)]$
$y_2 = 2(x^2 - 1)$

90. $y_1 = (x - 3) \cdot \frac{1}{x - 3}$
$y_2 = 1$

91. ***Depreciation*** A manufacturing plant purchases a new molding machine for $225,000. The depreciated value y after t years is given by

$$y = 225{,}000 - 20{,}000t, \qquad 0 \le t \le 8.$$

Sketch the graph of the equation.

92. ***Dimensions of a Rectangle*** A rectangle of length x and width w has a perimeter of 12 meters.

(a) Draw a rectangle that gives a visual representation of the problem. Use the specified variables to label the sides of the rectangle.

(b) Show that the width of the rectangle is $w = 6 - x$ and its area is $A = x(6 - x)$.

(c) Use a graphing utility to graph the area equation.

(d) From the graph of part (c), estimate the dimensions of the rectangle that yield a maximum area.

93. ***Think About It*** Suppose you correctly enter an expression for the variable y on a graphing utility. However, no graph appears on the display when you graph the equation. Give a possible explanation and the steps you could take to remedy the problem. Illustrate your explanation with an example.