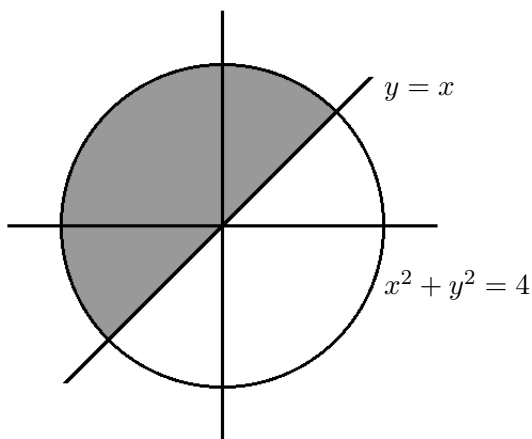
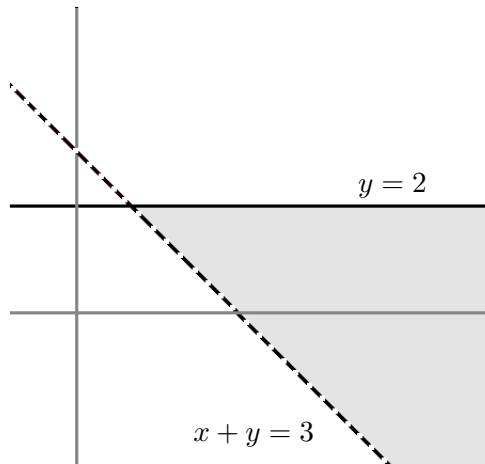


1.  $\{x : x \leq 4\}$
2.  $\left\{x : -\frac{7}{2} < x < \frac{1}{2}\right\}$
3. (a)  $4\sqrt{2}$   
 (b)  $\sqrt{61}$   
 (c)  $(x+1)^2 + (y-1)^2 = 61$   
 (d)  $(x-1)^2 + (y-1)^2 = 13$   
 (e) The point  $(3, 2)$  is not on the circle in Part (c), but the point  $(4, -5)$  is on the circle.
4. Find the center and radius of the following circles.
  - (a)  $(x-1)^2 + y^2 = 4$ , Center:  $(1, 0)$ , Radius: 2.
  - (b)  $(x-2)^2 + (y-1)^2 = 9$ , Center:  $(2, 1)$ , Radius: 3.
5. Graph the region  $\{(x, y) : x^2 + y^2 \leq 4 \text{ and } y \geq x\}$ :

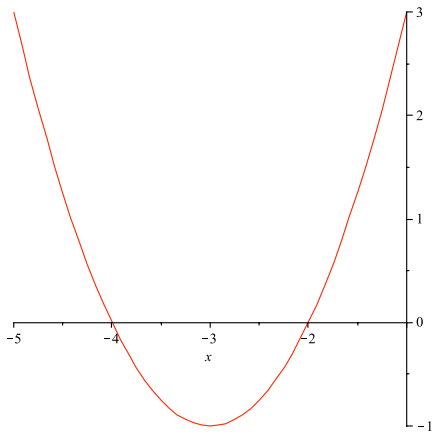


6. In the following questions, use the function  $g(x) = \frac{1}{\sqrt{x^2 - x - 6}}$ .
  - (a)  $g(0) = \frac{1}{\sqrt{-6}}$ , which is undefined.
  - (b)  $g(5) = \frac{1}{\sqrt{14}}$
  - (c)  $g(-1) = \frac{1}{\sqrt{-4}}$ , which is undefined.
  - (d)  $g(x^2) = \frac{1}{\sqrt{x^4 - x^2 - 6}}$
  - (e)  $g(x+2) = \frac{1}{\sqrt{x^2 + 3x - 4}}$
  - (f)  $(-\infty, -2) \cup (3, \infty)$

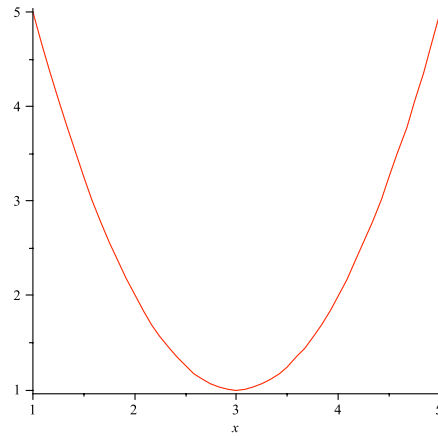
7. On a coordinate plane, shade the set of points that satisfy both the conditions  $x + y > 3$  and  $y \leq 2$ .



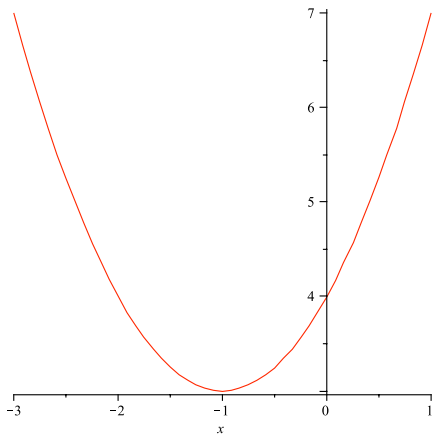
8. Graph of the functions:



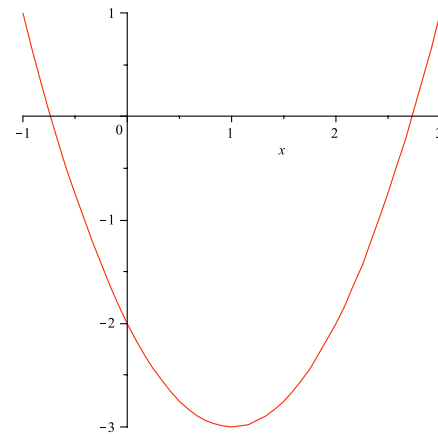
$$a(x) = (x + 3)^2 - 1$$



$$b(x) = (x - 3)^2 + 1$$



$$c(x) = (x + 1)^2 + 3$$



$$d(x) = (x - 1)^2 - 3$$

9. Let  $f(x) = (x - 6)^2 + 12$ .
- (a) Domain is  $\mathbb{R}$  and range is  $[12, \infty)$ .
  - (b) For every  $x$  in the domain, there is only one  $y$  value. Alternately, it passes the vertical line test.
  - (c) No.
10. In the following questions, give your final answer in slope-intercept form.
- (a)  $y = -2x + 2$
  - (b)  $y = \frac{1}{3}x + \frac{10}{3}$
  - (c)  $y = -\frac{1}{2}x + \frac{5}{2}$
  - (d)  $y = 5x - 7$
  - (e)  $y = 3x - 4$
  - (f)  $y = -\frac{2}{5}x - \frac{6}{5}$
  - (g)  $y = -\frac{1}{3}x + \frac{8}{3}$
  - (h)  $y = \frac{5}{2}x + \frac{15}{2}$
  - (i)  $x = 2$
11. For the following two questions, consider the function  $f(x) = x^2 - 6$ .
- (a) The  $x$ -intercepts of  $f$  are  $(\sqrt{6}, 0)$  and  $(-\sqrt{6}, 0)$ .
  - (b) The  $y$ -intercept of  $f$  is  $(0, -6)$ .
12. For the following two questions, consider the function  $f(x) = 2x^2 - 4x + 1$ .
- (a) The  $x$ -intercepts of  $f$  are  $(1 + \frac{\sqrt{2}}{2}, 0)$  and  $(1 - \frac{\sqrt{2}}{2}, 0)$ .
  - (b) The  $y$ -intercept of  $f$  is  $(0, 1)$ .
13.  $f(x) = x^2 + 4x + 5 = (x + 2)^2 + 1$ , so the vertex is  $(-2, 1)$ .
14.  $100x^2 \geq 0.1x^3$  when  $x$  is in the interval  $(-\infty, 1000]$ .