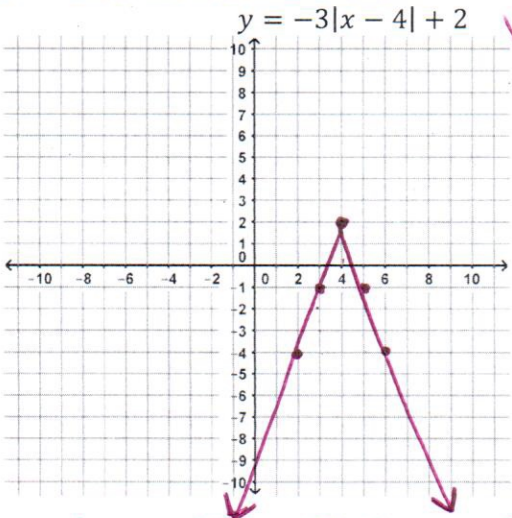


Review Assignment

Graph the following functions. State the domain and range.

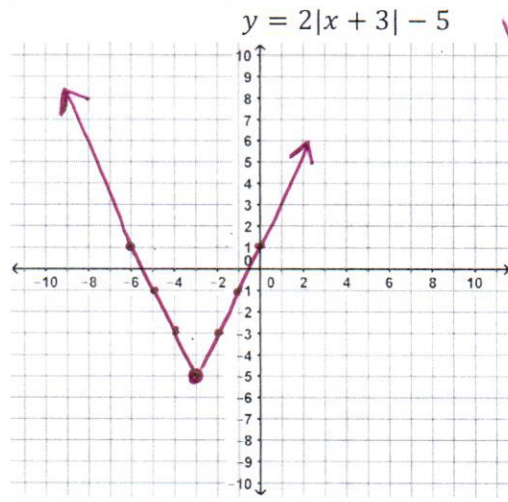
1. Graph the following function:



vertex
(4, 2)
m = -3
R4
↑2

D: $(-\infty, \infty)$ R: $(-\infty, 2]$

2. Graph the following function:



vertex:
(-3, -5)
m = 2
L3, ↓5

D: $(-\infty, \infty)$ R: $[-5, \infty)$

Evaluate the following piecewise functions.

$$f(x) = \begin{cases} 2x^2 - 4 & \text{if } x \leq -1 \\ 3x - 3 & \text{if } x > -1 \end{cases}$$

$$g(x) = \begin{cases} x - 5 & \text{if } x < 7 \\ 3x - 2 & \text{if } x \geq 7 \end{cases}$$

3. $g(7)$ $x=7$
 $3(7) - 2 = \boxed{19}$

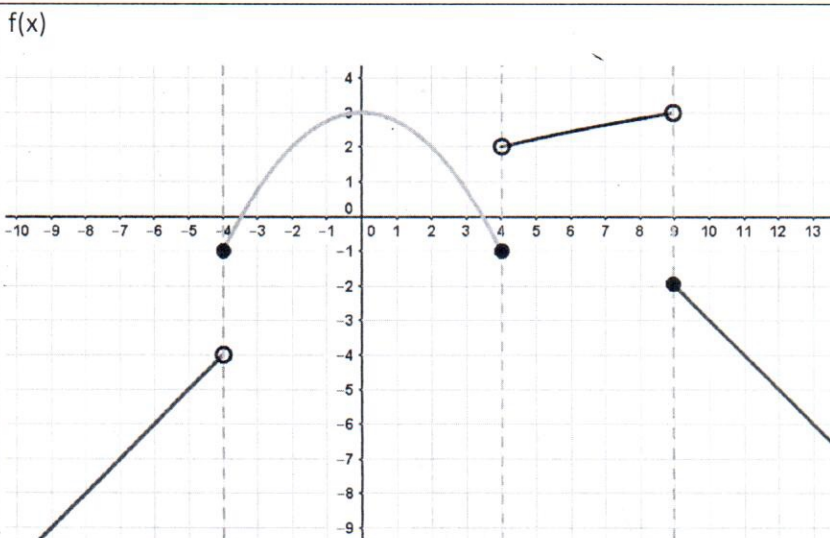
4. $f(7)$ $x=7$
 $3(7) - 3 = \boxed{18}$

5. $g(0)$ $x=0$
 $0 - 5 = \boxed{-5}$

6. $f(-5)$ $x=-5$
 $2(-5)^2 - 4 = \boxed{46}$

7. $g(-2)$ $x=-2$
 $-2 - 5 = \boxed{-7}$

8. $f(-6)$ $x=-6$
 $2(-6)^2 - 4 = \boxed{68}$



9. $f(3) = 1$
 $x=3$

10. $f(-4) = -1$
 $x=-4$

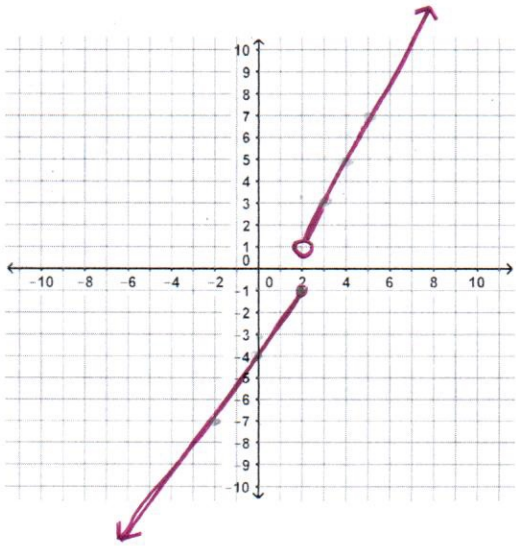
11. What does x equal when $f(x) = -1$? $y=-1$
 $x=4, x=-4$

12. What does x equal when $f(x) = -6$? $y=-6$
 $x=-6, x=13$

Graph the following piecewise functions.

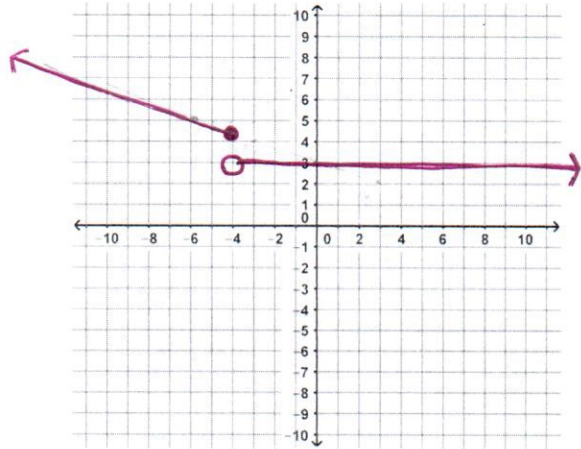
13.

$$f(x) = \begin{cases} \frac{3}{2}x - 4 & \text{if } x \leq 2 \text{ closed} \\ 2x - 3 & \text{if } x > 2 \text{ open} \end{cases}$$



14.

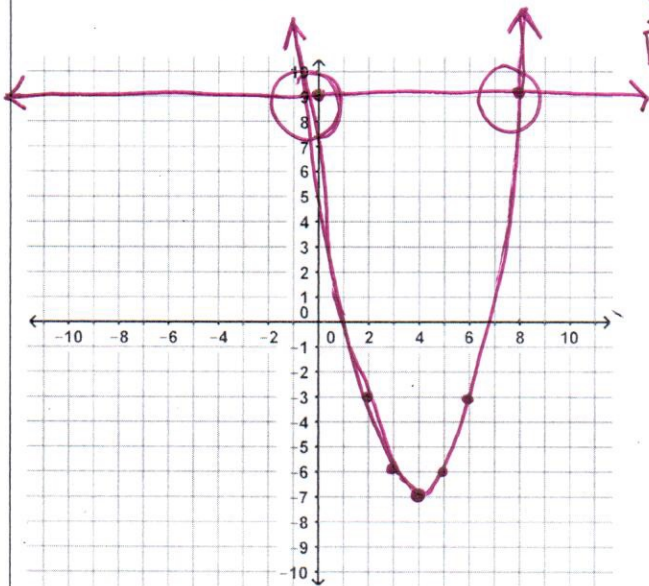
$$f(x) = \begin{cases} 3 & \text{if } x > -4 \text{ open} \\ -\frac{1}{3}x + 3 & \text{if } x \leq -4 \text{ closed} \end{cases}$$



Solve 15-17 by graphing. Solve 18-20 algebraically.

15. $y = (x - 4)^2 - 7$ vertex (4, -7)
 $y = 9$ line

x	y
2	-3
3	-6
4	-7
5	-6
6	-3
8	9

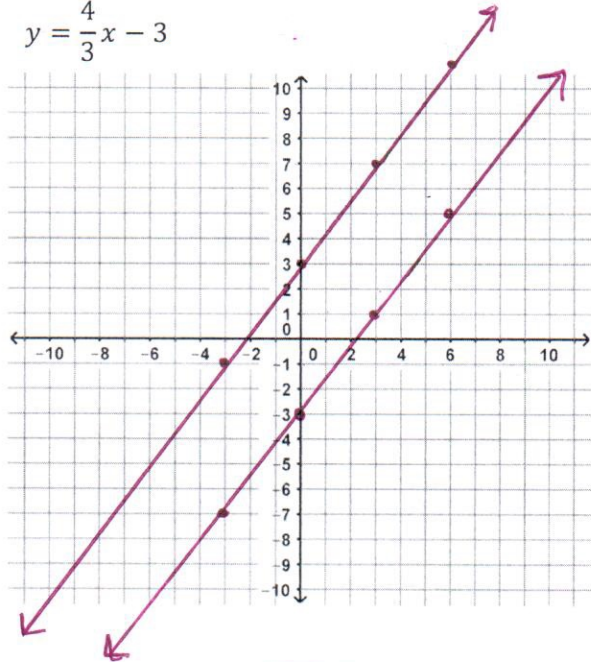


(0, 9) (8, 9)

16.

$$y = \frac{4}{3}x + 3$$

$$y = \frac{4}{3}x - 3$$

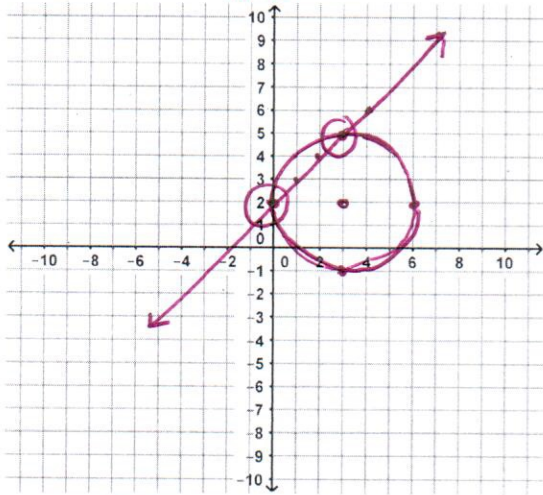


NO SOLUTIONS

★ The lines will never cross.

Solve 15-17 by graphing. Solve 18-20 algebraically.

17. $(x-3)^2 + (y-2)^2 = 9$ circle center $(3,2)$ $r=3$
 $y = x + 2$ line



$(0, 2)$ $(3, 5)$

18. $y = 15x + 6$
 $y = 10x - 4$ solve by substitution

$$\begin{array}{r} 15x + 6 = 10x - 4 \\ -10x \quad -10x \\ \hline 5x + 6 = -4 \\ -6 \quad -6 \\ \hline 5x = -10 \\ \frac{5x}{5} = \frac{-10}{5} \end{array}$$

$$x = -2$$

$$x = -2$$

$$y = 15(-2) + 6 = -24$$

$(-2, -24)$

19. $y = x^2 - 3x + 2$
 $y + 1 = x$
 $-1 \quad -1$
 $y = x - 1$ use substitution

$$\begin{array}{r} x + 1 = x^2 - 3x + 2 \\ -x + 1 \quad -x + 1 \\ \hline x^2 - 4x + 3 = 0 \end{array}$$

ac
 $\frac{3}{1, 3}$
 $-1, -3$

$$(x-1)(x-3) = 0$$

$$x = 1 \quad x = 3$$

$$y = 1 - 1 = 0 \quad y = 3 - 1 = 2$$

$(1, 0)$ $(3, 2)$

20. $x^2 + y^2 = 5$
 $x = y + 1$
 $-1 \quad -1$
 $y = x - 1$

$$x^2 + (x-1)^2 = 5$$

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

$$x^2 + x^2 - 2x + 1 = 5$$

$$2x^2 - 2x - 4 = 0$$

$$\frac{2(x^2 - x - 2) = 0}{2}$$

$$x^2 - x - 2 = 0$$

$$(x+1)(x-2) = 0$$

$$x = -1 \quad x = 2$$

$$y = -1 - 1 = -2 \quad y = 2 - 1 = 1$$

$(-1, -2)$
 $(2, 1)$