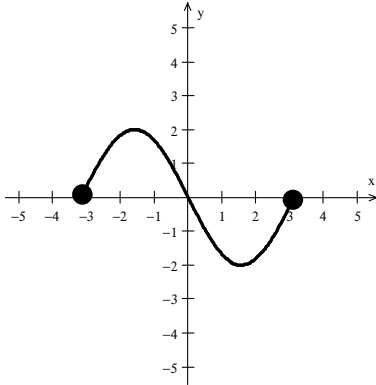


**COBURN MATH 120
REVIEW #2**

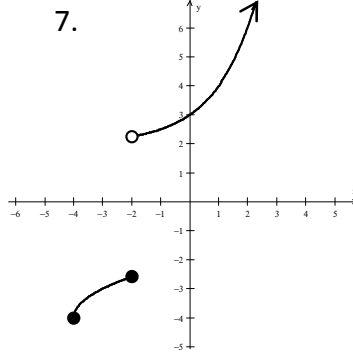
1. Find the equation of the circle with center $(-2, 4)$ and radius $\sqrt{11}$. Then sketch the graph.
2. Find the equation of the circle with center $(4,3)$ and contains the point $(-1,3)$. Then sketch the graph.
3. Identify the center and radius of the circle $(x - 2)^2 + (y + 5)^2 = 72$.
4. Write the equation of the line parallel to $12x + 5y = 65$ through the point $(-2, -1)$.
5. Write the equation of the line perpendicular to $y = -15$ through the point $(9,17)$.

Find the domain and range of each graph.

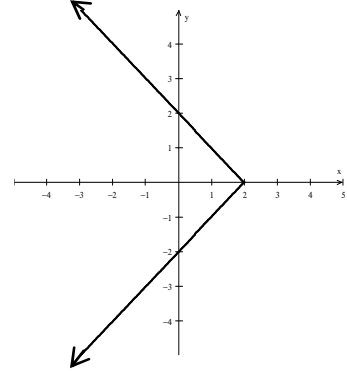
6.



7.



8.



Determine the domain of the following functions.

9. $f(x) = |2x - 5|$

10. $y = \sqrt{9x + 1}$

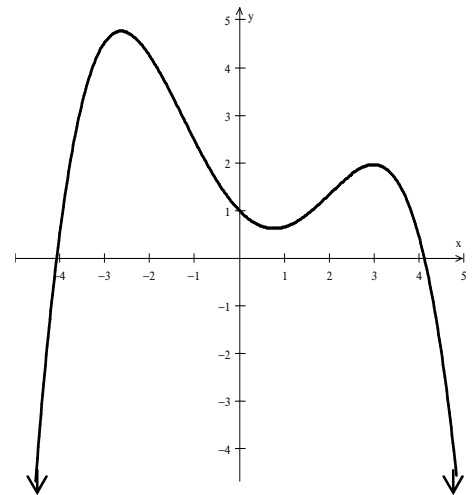
11. $g(x) = \frac{x-4}{x^2+2x-15}$

12. $f(x) = \frac{2}{\sqrt{x-5}}$

13. $y = \frac{\sqrt{x-2}}{x-5}$

Use the graph to determine each of the following:

14. Domain of $f(x)$ _____
15. Range of $f(x)$ _____
16. Zeroes of $f(x)$ _____
17. Intervals for which $f(x) \geq 0$ _____
18. Intervals for which $f(x) \leq 0$ _____
19. Intervals where $f(x)$ is increasing _____
20. Intervals where $f(x)$ is decreasing _____
21. Intervals where $f(x)$ is constant _____
22. Any relative maximum _____
23. Any relative minimum _____
24. $f(3)$ _____
25. All values of x for which $f(x) = 2$ _____
26. Is the function even, odd, or neither? _____



Graph the function using shifts of the basic function. Clearly state the basic function, all shifts, reflections, and stretches.

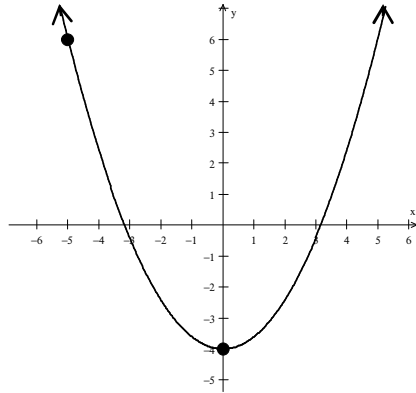
27. $f(x) = -2|x - 3| + 4$

28. $g(x) = \frac{1}{2}(x + 1)^2 + 5$

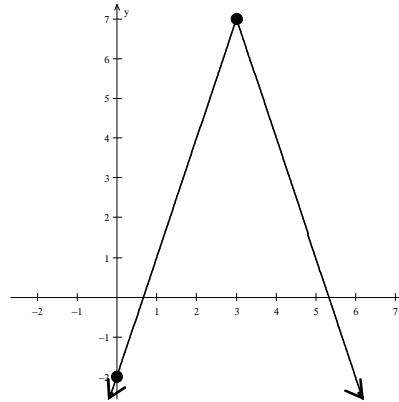
29. $h(x) = \sqrt{-x + 2}$

Use the graph given and the points indicated to determine the equation of the function shown.

30. $(-5, 6)$ and $(0, -4)$



31. $(0, -2)$ and $(3, 7)$



Evaluate the piecewise function.

$$32. f(x) = \begin{cases} 5 & x < -3 \\ x^2 - 4 & -3 \leq x \leq 3 \\ 2x + 1 & x > 3 \end{cases}$$

a. $f(-5)$ b. $f(-2)$ c. $f(0)$ d. $f(3)$ e. $f(5)$

Given $f(x) = x^2 - 8$ and $g(x) = \sqrt{x - 1}$, find each of the following and the domain.

33. $(f - g)(x)$

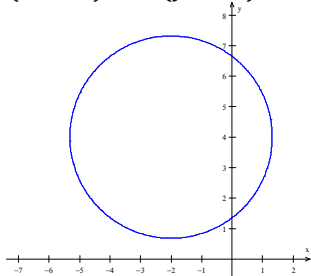
34. $\left(\frac{f}{g}\right)(x)$

35. $(f \circ g)(x)$

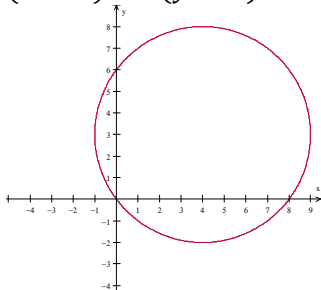
36. $(g \circ f)(x)$

ANSWERS TO REVIEW #2
CHAPTER 2

1. $(x + 2)^2 + (y - 4)^2 = 11$



2. $(x - 4)^2 + (y - 3)^2 = 25$



3. Center $(2, -5)$, Radius $6\sqrt{2}$

4. $y = -\frac{12}{5}x - \frac{29}{5}$

5. $x = 9$

6. Domain: $[-3, 3]$; Range: $[-2, 2]$

7. Domain: $[-4, \infty)$; Range: $[-4, -2] \cup (-2, \infty)$

8. Domain: $(-\infty, 2]$; Range: $(-\infty, \infty)$

9. $(-\infty, \infty)$

10. $[-\frac{1}{9}, \infty)$

11. $(-\infty, -5) \cup (-5, 3) \cup (3, \infty)$

12. $(5, \infty)$

13. $[2, 5) \cup (5, \infty)$

14. $(-\infty, \infty)$

15. $(-\infty, 5]$

16. $(-4, 0), (4, 0)$

17. $[-4, 4]$

18. $(-\infty, -4], [4, \infty)$

19. $(-\infty, -3), (1, 3)$

20. $(-3, 1), (3, \infty)$

21. None

22. $(-3, 5)$ and $(3, 2)$

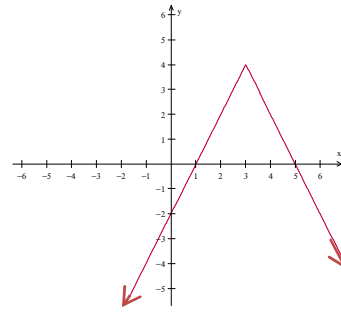
23. $(0.75, 0.75)$

24. 2

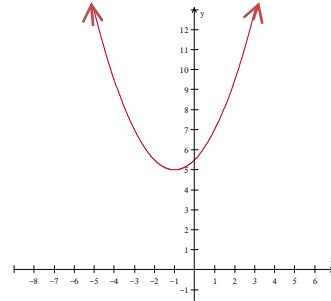
25. $x = -3.75, -0.75, 3$

26. Neither

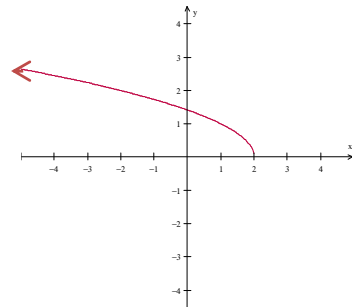
27. Basic function: $f(x) = |x|$
 Reflects over x-axis
 Shifts right 3 units and up 4 units
 Graph compresses (narrows)



28. Basic function: $f(x) = x^2$
 Shifts left 1 unit and up 5 units
 Stretches (wider)



29. Basic function: $f(x) = \sqrt{x}$
 Shifts left 2 units then reflects over the y-axis **OR**
 Reflects over the y-axis and shifts right 2 units



30. $f(x) = \frac{2}{5}x^2 - 4$
 31. $f(x) = -3|x - 3| + 7$
 32. a. 5 b. 0 c. -4 d. 5 e. 11
 33. $(f - g)(x) = x^2 - 8 - \sqrt{x - 1}$; Domain: $[1, \infty)$
 34. $\left(\frac{f}{g}\right)(x) = \frac{x^2 - 8}{\sqrt{x - 1}}$; Domain: $(1, \infty)$
 35. $(f \circ g)(x) = x - 9$; Domain: $[1, \infty)$
 36. $(g \circ f)(x) = \sqrt{x^2 - 9}$; Domain: $[3, \infty)$