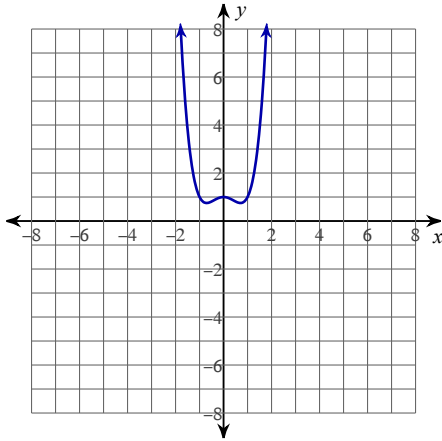


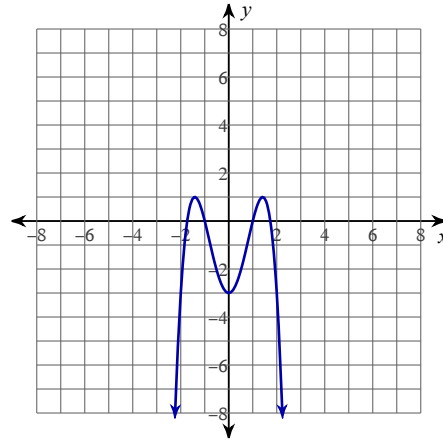
Summer Assignment

Approximate all points of relative extrema of each function.

1)

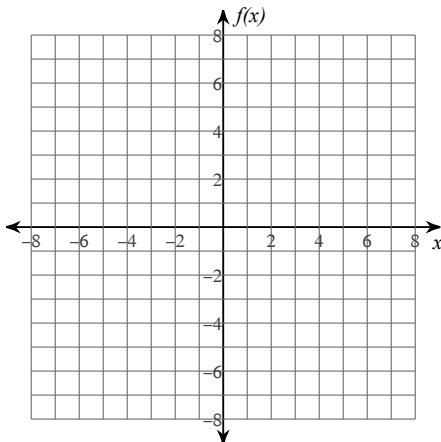


2)

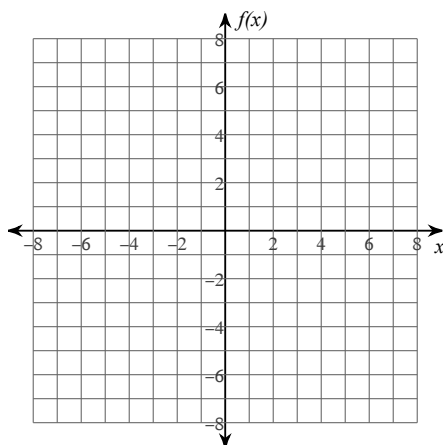


Consider each power function. Determine the domain and range, intercepts, end behavior, continuity, and regions of increase and decrease. Then sketch the graph.

3)  $f(x) = 3x^7$



4)  $f(x) = 3x^5$



Describe the transformations necessary to transform the graph of  $f(x)$  into that of  $g(x)$ .

5)  $f(x) = \frac{1}{x}$

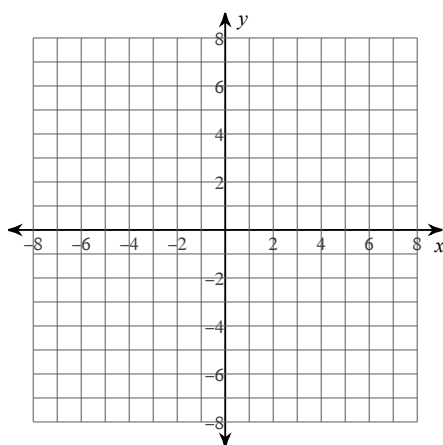
$g(x) = -\frac{1}{x} - 1$

6)  $f(x) = \frac{1}{x}$

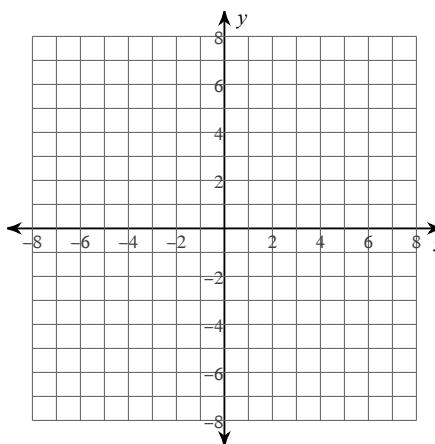
$g(x) = -\frac{3}{x}$

Sketch the graph of each function.

7)  $g(x) = \begin{cases} -2x - 3, & x \leq -1 \\ 4 - x^2, & x > -1 \end{cases}$



8)  $g(x) = \begin{cases} -x - 3, & x \leq -1 \\ \frac{1}{x+2}, & x > -1 \end{cases}$



**Perform the indicated operation.**

9)  $f(x) = 2x - 2$   
 $g(x) = x - 3$   
Find  $(f - g)(x)$

10)  $f(x) = x - 2$   
Find  $(f \circ f)(x)$

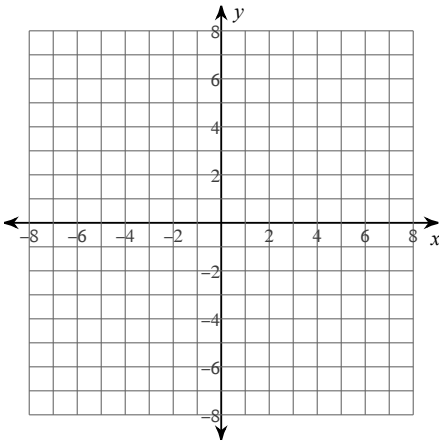
**Find the inverse of each function.**

11)  $f(n) = 4n$

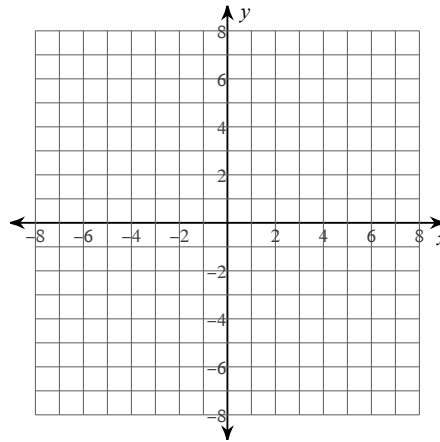
12)  $f(n) = -3n$

**Sketch the graph of each function.**

13)  $f(x) = -x^3 + 4x^2 - 6$



14)  $f(x) = x^3 - x^2 + 1$



**Divide. Write your answer in fraction form.**

15)  $(3x^3 + 11x^2 - 20x + 4) \div (x + 5)$

16)  $(8x^2 + 20x + 12) \div (2x + 5)$

**Write a polynomial function of least degree with integral coefficients that has the given zeros.**

17) 4, -1, 5,  $\frac{2}{5}$

18) -1,  $-\frac{1}{2}$ , 2

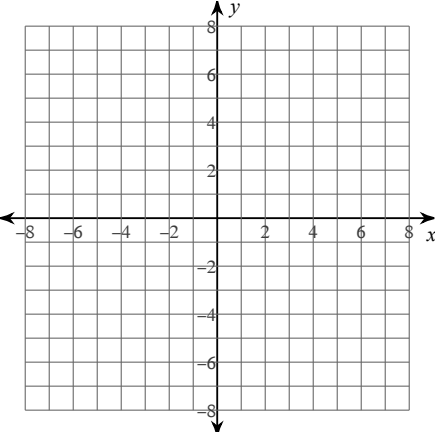
**Find all zeros.**

19)  $f(x) = 3x^4 - 14x^3 + 15x^2$

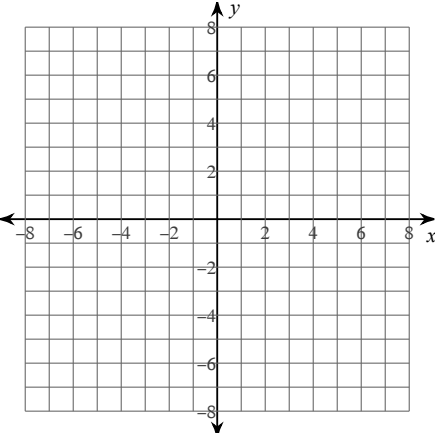
20)  $f(x) = x^3 - 3x^2 - 48x - 40$

For each function, identify the holes, intercepts, and horizontal asymptote. Then sketch the graph.

21)  $f(x) = \frac{x + 2}{-3x + 3}$

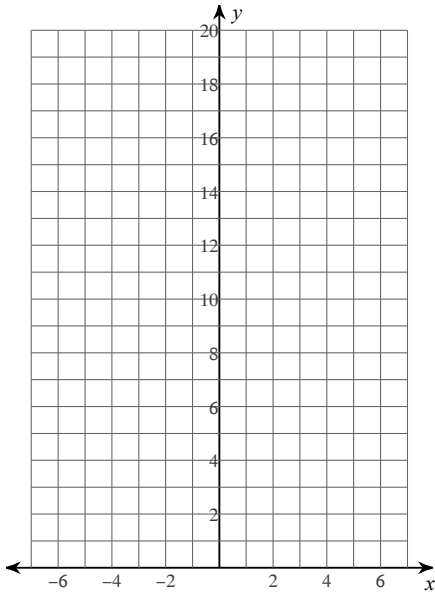


22)  $f(x) = \frac{x^2 - 7x + 12}{x^2 - 4}$



**Sketch the graph of each function.**

23)  $y = 2 \cdot \left(\frac{1}{3}\right)^x$



**Solve each equation.**

24)  $3^{-3x+1} = 3^{2x}$

**Rewrite each equation in exponential form.**

25)  $\log_5 \frac{1}{125} = -3$

**Evaluate each expression.**

26)  $\log_6 6$

**Expand each logarithm.**

27)  $\log_9 (x^4 y^5)$

28)  $\log_4 (7^3 \cdot 11)^5$

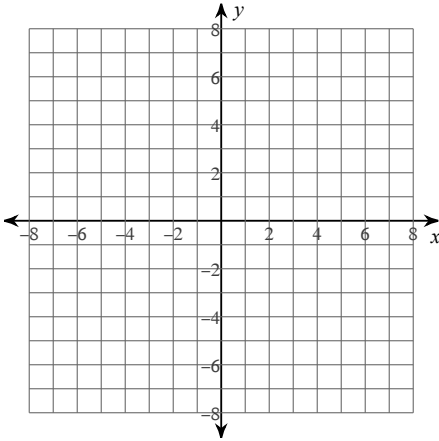
**Solve each equation.**

29)  $\log_9 4 + \log_9 4x^2 = 2$

30)  $\log_7 4 + \log_7 4x^2 = 2$

**Identify the domain and range of each. Then sketch the graph.**

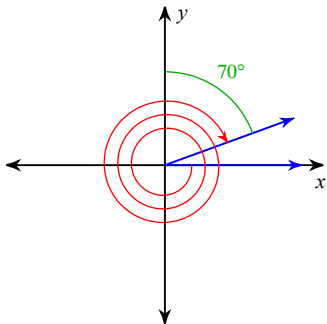
31)  $y = \log_6 (x - 3) + 1$



32) Pranav invests \$7,420 in a retirement account with a fixed annual interest rate of 9% compounded continuously. What will the account balance be after 14 years?

**Find the measure of each angle.**

33)

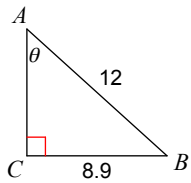


**Convert each degree measure into radians and each radian measure into degrees.**

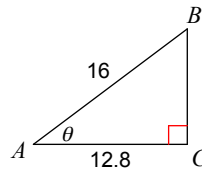
34)  $\frac{43\pi}{18}$

Find the measure of each angle indicated. Round to the nearest tenth.

35)

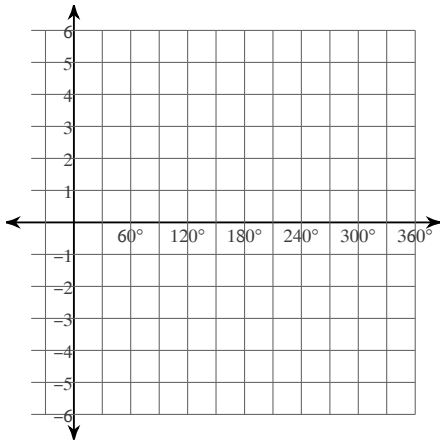


36)

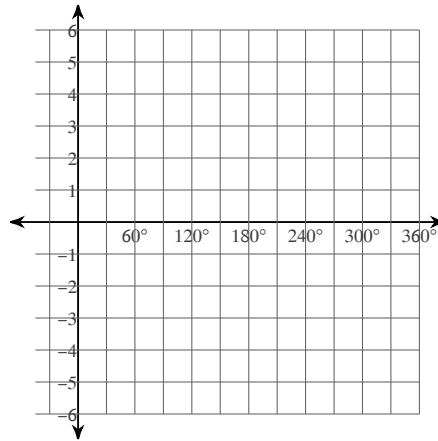


Graph each function using degrees.

37)  $y = 4\cos(3\theta + 120)$



38)  $y = \frac{1}{2} \cdot \sin 2\theta$



Solve each equation for  $0 \leq \theta < 360$ .

39)  $-\frac{5}{2} = -2 + \sin \theta$

Find the exact value of each expression.

40)  $\tan^{-1}\left(\csc \frac{\pi}{2}\right)$

Use identities to find the value of each expression.

41) Find  $\sec \theta$  and  $\cos \theta$

if  $\csc \theta = -\frac{7}{3}$  and  $\cos \theta < 0$ .

Solve each equation for  $0 \leq \theta < 2\pi$ .

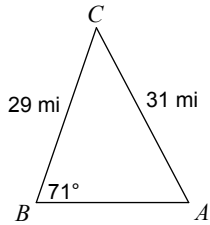
42)  $\cot \theta \tan \theta - \tan \theta = -\cot \theta - \tan \theta$

Simplify.

43)  $\sin -2u \cos -3u - \cos -2u \sin -3u$

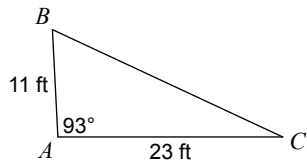
Find each measurement indicated. Round your answers to the nearest tenth.

44) Find  $m\angle A$



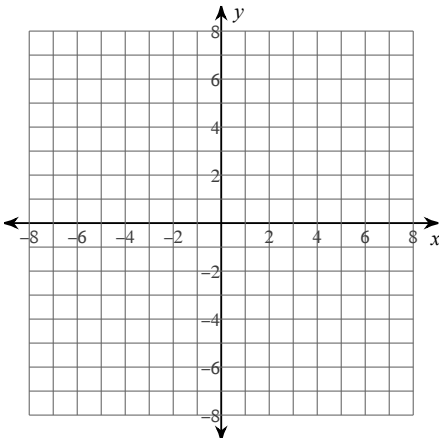
Solve each triangle. Round your answers to the nearest tenth.

45)



Identify the vertex, focus, axis of symmetry, directrix, direction of opening, and y-intercept of each. Then sketch the graph.

46)  $y = 2x^2 + 12x + 17$



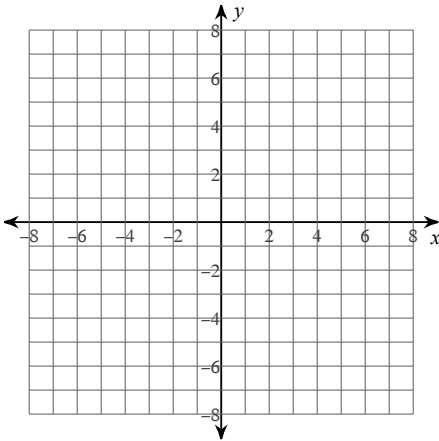


Use the information provided to write the vertex form equation of each parabola.

47) Vertex:  $(4, -9)$ , Focus:  $(4, -\frac{359}{40})$

Identify the center and radius of each. Then sketch the graph.

48)  $(x - \sqrt{11})^2 + (y - \frac{5}{2})^2 = 3$

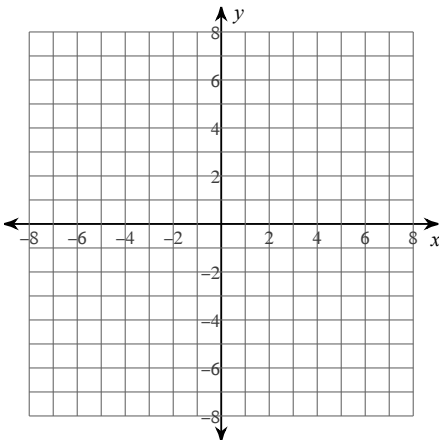


Use the information provided to write the standard form equation of each circle.

49) Center:  $(14, -15)$   
Radius: 4

Identify the center, vertices, foci, length of the major axis, and length of the minor axis of each. Then sketch the graph.

50)  $\frac{(x + 2)^2}{4} + \frac{(y + 2)^2}{25} = 1$

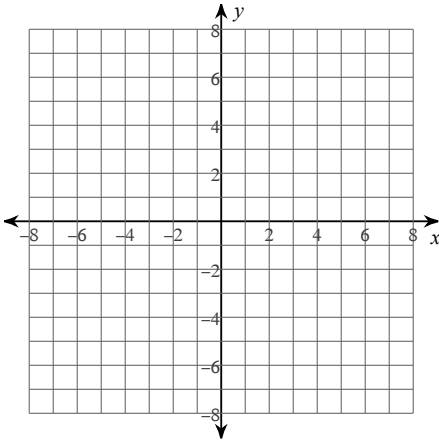


Use the information provided to write the standard form equation of each ellipse.

- 51) Vertices:  $(-7, 14), (-7, -6)$   
Foci:  $(-7, 10), (-7, -2)$

Identify the vertices, foci, and asymptotes of each. Then sketch the graph.

52)  $\frac{(y + 1)^2}{15} - \frac{(x + 1)^2}{15} = 1$



Use the information provided to write the standard form equation of each hyperbola.

- 53) Vertices:  $(11, -8), (-15, -8)$   
Endpoints of Conjugate Axis:  $(-2, 3)$   
 $(-2, -19)$

Classify each conic section.

54)  $31u^2 - 10\sqrt{3} \cdot uv + 21v^2 - 144 = 0$

55)  $-u^2 + 2uv - v^2 + 3\sqrt{2} \cdot u + 3\sqrt{2} \cdot v = 0$

56)  $-23u^2 + 82\sqrt{3} \cdot uv + 59v^2 - 1600 = 0$