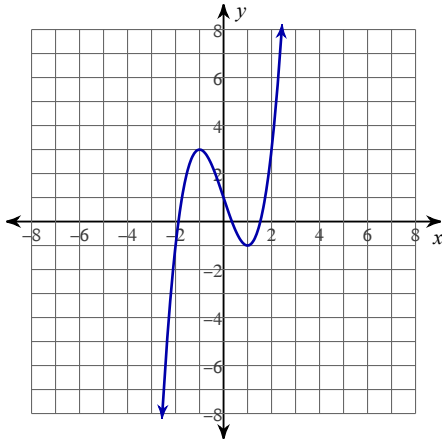


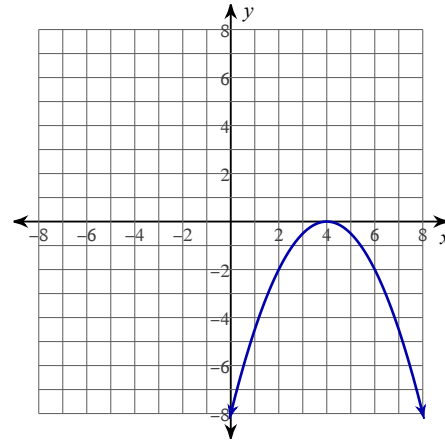
Summer Assignment

Approximate all points of relative extrema of each function. Then approximate the open intervals where each function is increasing and decreasing.

1)

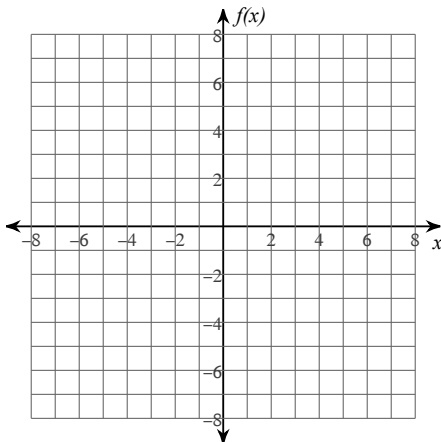


2)

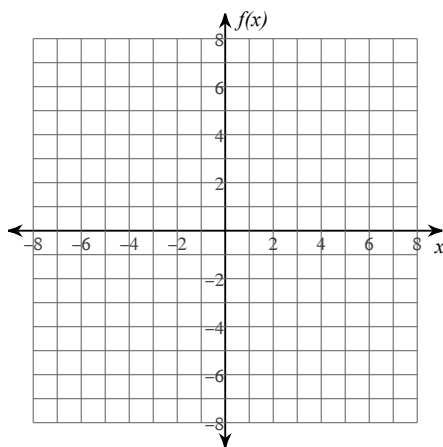


Consider each power function. Determine the domain and range, intercepts, end behavior, continuity, and regions of increase and decrease. Then sketch the graph.

3)  $f(x) = 2x^6$

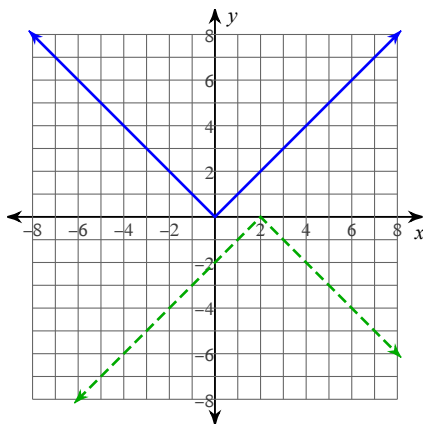


4)  $f(x) = 5x^9$

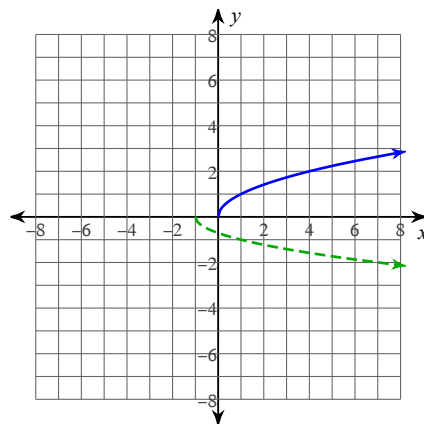


Describe the transformations necessary to transform the graph of  $f(x)$  (solid line) into that of  $g(x)$  (dashed line).

5)

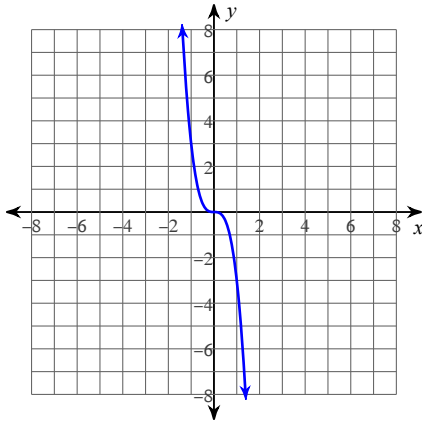


6)

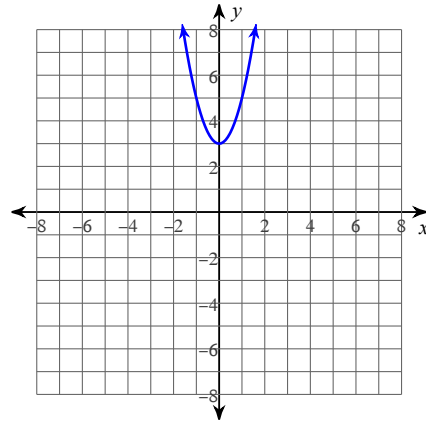


Identify the parent function  $f(x)$  and write an equation for the function given.

7)



8)



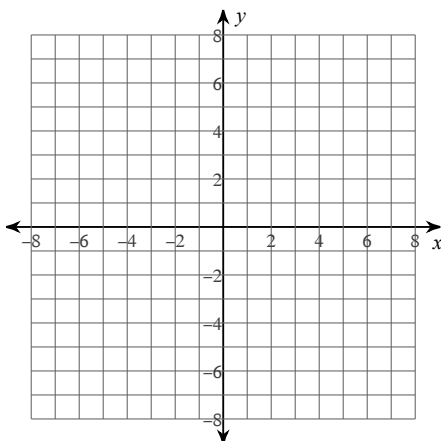
Perform the indicated operation.

9)  $h(x) = x^2 - x$   
 $g(x) = 4x + 3$   
 Find  $(5h - g)(x)$

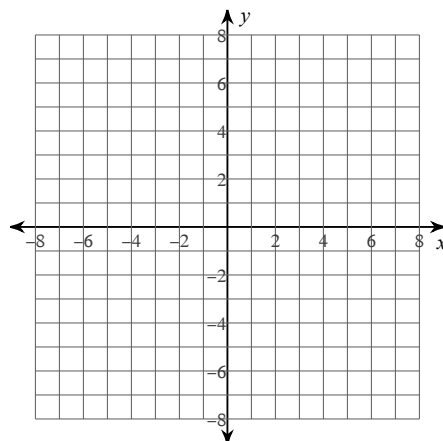
10)  $f(t) = 3t$   
 $g(t) = t^2 - 1$   
 Find  $(3f + g)(t)$

For each function: (1) state the maximum number of turns the graph could make, (2) determine the real zeros and state the multiplicity of any repeated zeros, (3) list the x-intercepts where the graph crosses the x-axis, and (4) sketch the graph.

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



12)  $f(x) = x^3 - 2x^2 + x$



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

13)  $(2x^3 - 15x^2 - 9x + 20) \div (2x + 3)$

14)  $(14x^2 - 23x) \div (2x - 3)$

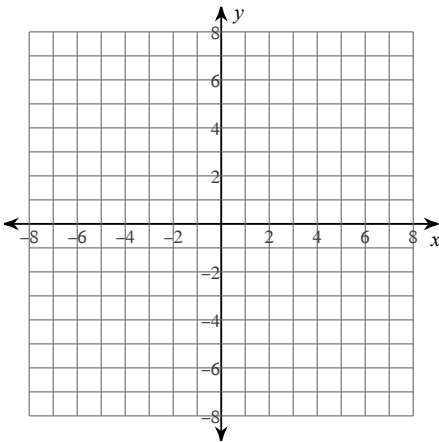
**Find all zeros.**

15)  $f(x) = 2x^3 + 5x^2 + 4x + 1$

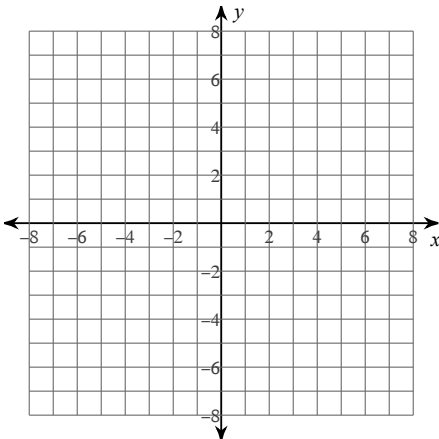
16)  $f(x) = 10x^5 - 5x^4 + 16x^3 - 8x^2 - 8x + 4$

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

17)  $f(x) = \frac{x^2 - x - 12}{4x^2 - 4x - 24}$



18)  $f(x) = \frac{2x^2 - 2x - 12}{x^2 + 2x - 3}$



Expand each logarithm.

19)  $\log_2 \left( \frac{x^5}{y} \right)^4$

20)  $\log_3 \left( \frac{x}{y^6} \right)^4$

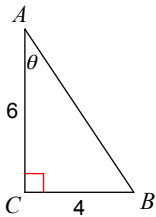
Solve each equation.

21)  $\log_3 (2r + 9) = \log_3 18$

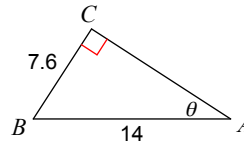
22)  $\log_3 (3r + 8) = \log_3 4$

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

23)

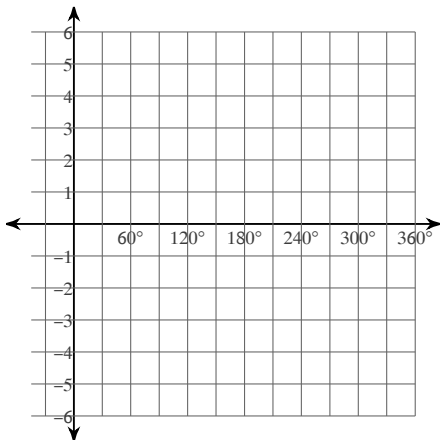


24)

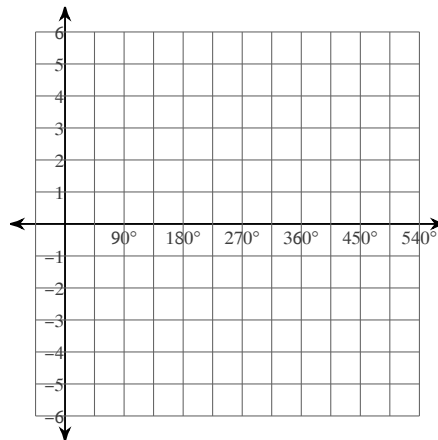


Graph each function using degrees.

25)  $y = 4\cos(4\theta + 135)$

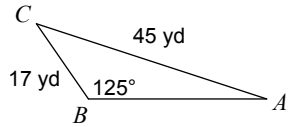


26)  $y = 3\sin(\theta + 240)$

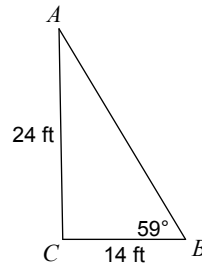


Find each measurement indicated. Round your answers to the nearest tenth.

27) Find  $m\angle A$

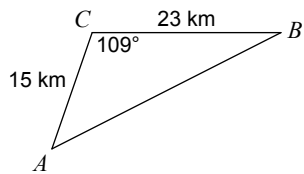


28) Find  $m\angle A$

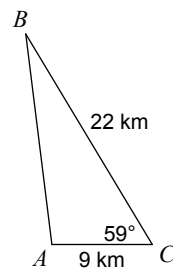


Solve each triangle. Round your answers to the nearest tenth.

29)



30)



Find the exact value of each expression.

31)  $\sec \tan^{-1} 1$

32)  $\cos \tan^{-1} 1$

Use identities to find the value of each expression.

33) Find  $\sec \theta$  and  $\cot \theta$

if  $\sin \theta = \frac{5}{7}$  and  $\sec \theta > 0$ .

34) Find  $\tan \theta$  and  $\csc \theta$

if  $\cot \theta = \frac{3}{4}$  and  $\sec \theta > 0$ .