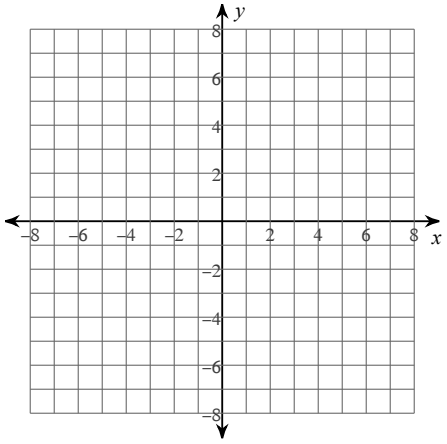
Calculus Name_____

Summer Packet

Date_____

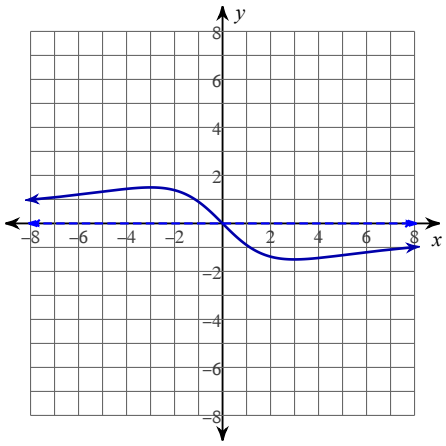
Sketch the graph of each function.

1) $g(x) = \begin{cases} -x - 3, & x < 3 \\ 4, & x \geq 3 \end{cases}$



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

2)



3) Heather invests $7,746 in a savings account with a fixed annual interest rate of 8% compounded continuously. What will the account balance be after 12 years?

4) Cody invests $2,589 in a retirement account with a fixed annual interest rate of 8% compounded continuously. What will the account balance be after 20 years?

State if the given functions are inverses.

5) $g(x) = (x - 1)^3$
$f(x) = \sqrt[3]{x} + 1$

Find the inverse of each function.

6) $g(x) = -\dfrac{3}{x+1} + 2$

Expand each logarithm.

7) $\log_3 \left(\dfrac{x}{y^4}\right)^6$

8) $\log_3 \left(\dfrac{u^4}{v}\right)^4$

Condense each expression to a single logarithm.

9) $\dfrac{\log_5 u}{3} + \dfrac{\log_5 v}{3} + \dfrac{\log_5 w}{3}$

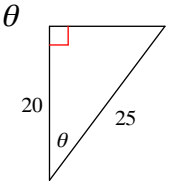
10) $6\log_5 u + 30\log_5 v$

Convert each degree measure into radians.

11) 135°

Find the value of the trig function indicated.

12) sec θ

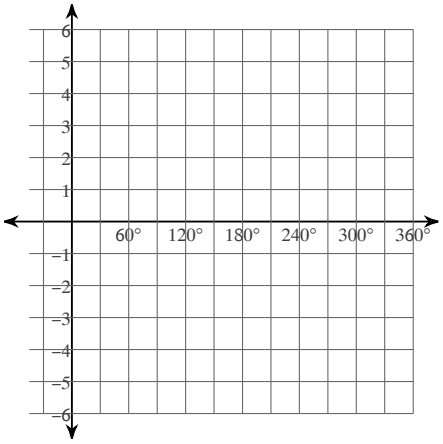


Find the exact value of each trigonometric function.

13) cos 495°

Find the amplitude, the period in degrees, the phase shift in degrees, and the vertical shift. Then sketch the graph using degrees.

14) $y = 1 + 4\cos(3\theta - 30)$



Find the exact value of each expression.

15) $\tan^{-1} 0$

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

1) Center: $\left(\sqrt{158}, 5\right)$
Radius: $\sqrt{33}$

Write the point-slope form of the equation of each line given the slope and y-intercept.

16) Slope = 0, y-intercept = 5

Write the point-slope form of the equation of the line through the given point with the given slope.

17) through: $(2, -3)$, slope = 1

Write the point-slope form of the equation of the line through the given points.

18) through: $(4, -4)$ and $(-5, -2)$

Write the point-slope form of the equation of the line described.

19) through: $(3, 3)$, parallel to $y = \frac{6}{5}x + 4$

20) through: $(-3, 0)$, perp. to $y = -\frac{8}{5}x - 3$

Solve each equation.

21) $|8k - 10| = 18$

22) $|7a + 9| = 26$

Solve each system by elimination.

23) $-2x - y = -1$
$12x + 8y = 16$

Solve each system by substitution.

24) $x - 5y = -24$
$-5x + 2y = 5$