

Name _____ Date: _____ Period: _____

AP CALCULUS AB SUMMER ASSIGNMENT

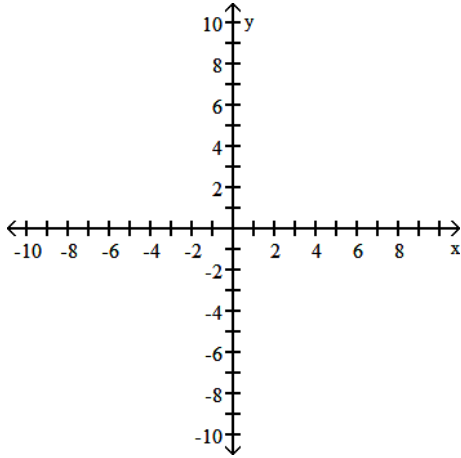
SHOW WORK FOR EVERY QUESTION!

A particle moves from A to B in the coordinate plane. Find the increments Δx and Δy in the particle's coordinates.

1) $A(-6.5, 1.9)$, $B(4.6, 7.6)$

Plot the points and find the slope (if any) of the line they determine.

2) $A(-5, 3)$, $B(3, 3)$



Find an equation for the vertical line and the horizontal line through the given point.

3) $(-\pi, 0)$

Write an equation for the line described.

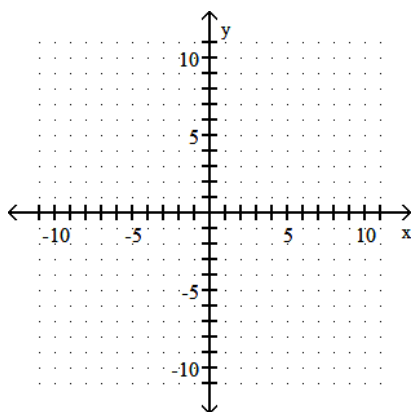
4) Passes through $(5, -1)$ and perpendicular to the line $-7x + 8y = -43$

Find the slope and the y-intercept of the line.

5) $4y + 2x = 4$

Graph the line.

$$6) -\frac{7}{2}x - y = -7$$



Find the formula for the function.

- 7) Express the perimeter of an isosceles triangle with side lengths x , $5x$, and $5x$ as a function of the side length.

Find the domain and range.

$$8) f(x) = \frac{14}{14 - x}$$

Graph the function on your calculator to determine the domain and range from the graph.

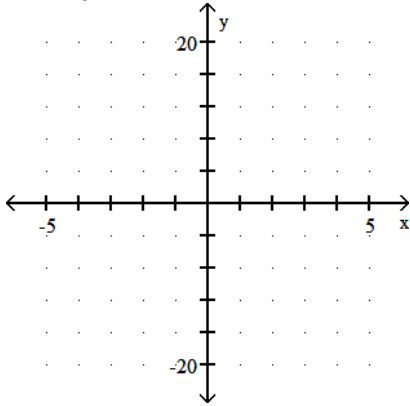
$$9) y = \sqrt[3]{x+7} + 4$$

Determine if the function is even, odd, or neither.

$$10) y = \sqrt{x^2 - 3}$$

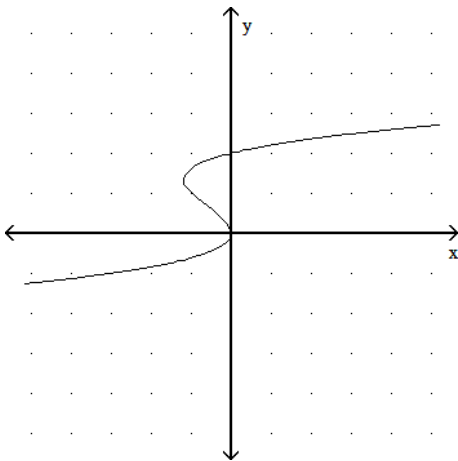
Graph the piecewise-defined function.

$$11) f(x) = \begin{cases} 4x^2, & \text{for } x \leq -1, \\ 4, & \text{for } -1 < x \leq 1, \\ 4x + 1, & \text{for } x > 1 \end{cases}$$



Use the vertical line test to determine if the graph is a graph of a function.

12)

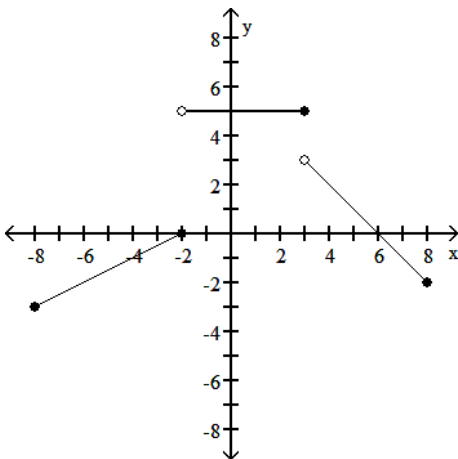


A) No

B) Yes

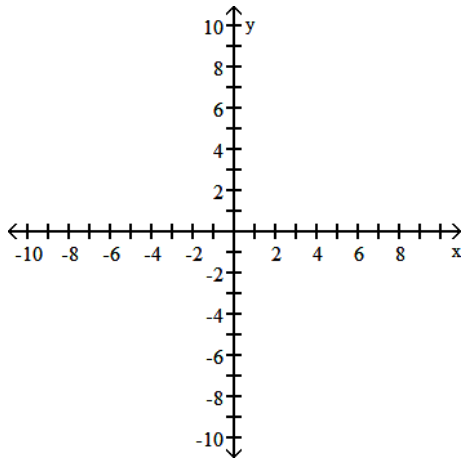
Find a formula for the function graphed.

13)



Graph the function.

14) $y = \frac{1}{(x - 3)^2}$

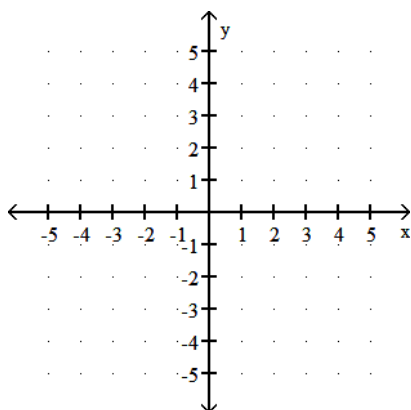


Solve the problem.

15) If $(f \circ g)(x) = \frac{1}{\sqrt{x-7}}$ and $f(x) = \frac{1}{x-7}$, find $g(x)$.

Graph the exponential function.

16) $y = 2^{-x} - 4$



Rewrite the exponential expression to have the indicated base.

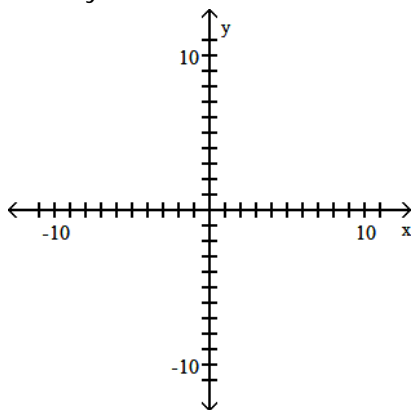
17) 9^{2x} ; base 3

Use your grapher to find the zero of the function. Round your answer to three decimal places.

18) $f(x) = 6 - 2^x$

Graph the pair of parametric equations.

19) $x = 2t, y = t + 2, -2 \leq t \leq 3$

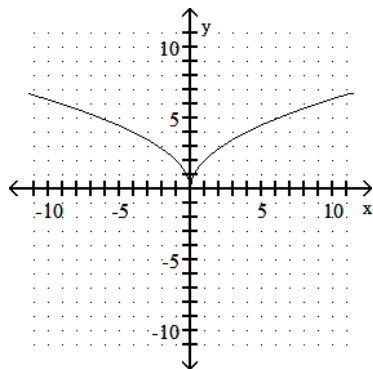


Find a Cartesian equation for the curve.

20) $x = t - 2, y = \frac{3}{t + 7}$

Determine if the function is one-to-one.

21)



A) Yes

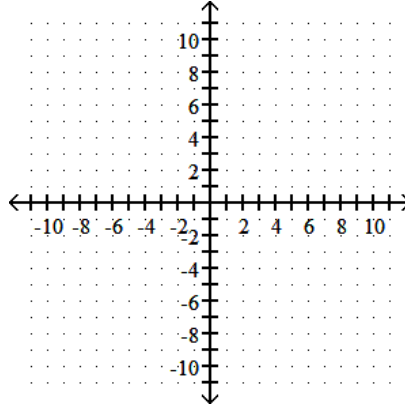
B) No

Find the inverse of the function.

22) $f(x) = x^2 + 6, x \leq 0$

Graph the function f as a solid curve. Then, on the same coordinate system, graph f^{-1} as a dashed curve.

23) $f(x) = \ln x$

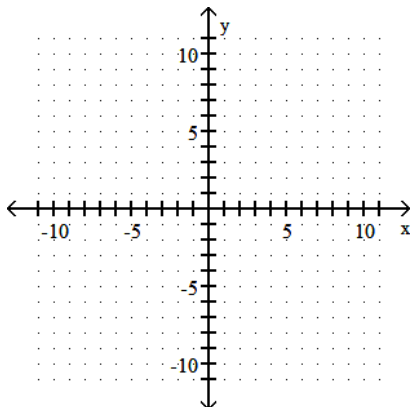


Solve the equation.

24) $\ln(y + 4) - \ln 8 = x + \ln x$; Solve for y .

Graph the function.

25) $f(x) = \ln x + 2$



Find the requested function value meeting all of the given conditions.

26) $\sin \theta = -\frac{1}{2}$ and $\cos \theta < 0$; Find $\tan \theta$.

Find the requested value or interval.

27) Find the range of the function $y = 7 \sin \left(3x + \frac{\pi}{3} \right) + 4$

Find the exact value of the real number y .

28) $y = \sin^{-1} \left(\frac{\sqrt{2}}{2} \right)$

Find θ to four significant digits for $0 \leq \theta < 2\pi$.

29) $\sin \theta = 0.4667$

Find the indicated trigonometric function, given that θ is an angle in standard position with the terminal side passing through the given point.

30) $(-6, 7)$; Find $\cot \theta$.