

**CALCULUS Chapter 1 PreTest**

Name: \_\_\_\_\_ Date \_\_\_\_\_

1. If L is the line  $y = -\frac{3}{4}x - 2$   
 (a) write an equation for the line through a point (-2, 2) perpendicular to L \_\_\_\_\_

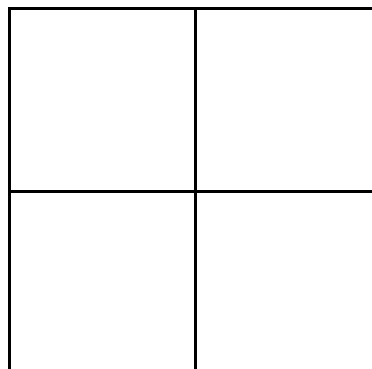
(b) Write an equation for the line through points (2, -2) and (-2, 0) \_\_\_\_\_

2. For the function  $y = \sqrt{x^2 - 4} + 6$ , find  
 (a) the domain, \_\_\_\_\_  
 (b) the range, \_\_\_\_\_  
 (c) if the function is even, odd, or neither  
 \_\_\_\_\_

3. If

$$f(x) = \begin{cases} x^2 - 2, & x \leq 1 \\ 2x, & x > 1 \end{cases}$$

- (a) Draw the graph of  $f(x)$   
 (b) Find the domain \_\_\_\_\_  
 (c) Find the range \_\_\_\_\_



4. If  $f(x) = 2x^3$  and  $g(x) = \frac{1}{2-x}$ ,  
 find (a)  $f \circ g$  \_\_\_\_\_ domain: \_\_\_\_\_ range: \_\_\_\_\_  
 (b)  $g \circ f$  \_\_\_\_\_ domain: \_\_\_\_\_ range: \_\_\_\_\_

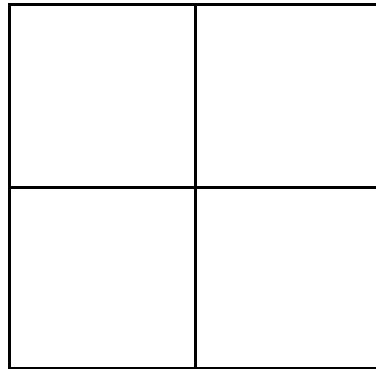
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5. Use a graph to solve the equation

$$15 - 2^{-x} = 0$$

\_\_\_\_\_



6. If the population of certain species grows by 2.5% yearly from 200 in how many years will the population be 75000. \_\_\_\_\_

7. If  $f(x) = \sqrt{4-x}$ , find an expression for  $f^{-1}(x)$ . State any necessary domain restrictions. \_\_\_\_\_

8. Let  $y = 2 \cos\left(\frac{3x}{2} + \pi\right) - 3$ . Determine the function's

(a) period, \_\_\_\_\_

(b) domain \_\_\_\_\_

(c) range. \_\_\_\_\_

9. Solve the equation  $\csc x = -3$  in the interval  $0 \leq x \leq 2\pi$ . \_\_\_\_\_

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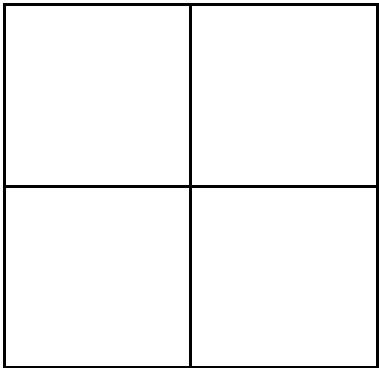
Not required:

10. Find a parameterization for the left half of the parabola  $y = x^2 - 5$  \_\_\_\_\_

11. (a) Graph the parametrized curve described by

$x = \frac{1}{2} \cos t$ ,  $y = -\sin t$ ,  $0 \leq t \leq \pi$ . Indicate the direction in which the curve is traced.

(b) Find a Cartesian equation for the parametrized curve. What portion of the Cartesian equation is traced by the parametrized curve? \_\_\_\_\_



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Ans.:

1. (a)  $y = \frac{4}{3}x + \frac{14}{3}$  (b)  $y = -\frac{1}{2}x - 1$

2. (a) D:  $(-\infty, -2] \cup [2, \infty)$ , (b) R:  $[6, \infty)$  (c) even

3. (a) (b)  $(-\infty, \infty)$  (c) R:  $[-2, \infty)$

4. (a)  $f \circ g = \frac{2}{(2-x)^3}$ , D:  $x \neq 2$ , R:  $y \neq 0$  (b)  $g \circ f = \frac{2}{2(1-x^3)}$ , D:  $x \neq 1$ , R:  $y \neq 0$

5.

6.  $p = 200(1+0.025)^t = 75000 \rightarrow t = f \circ g = \frac{\log(375)}{\log(1.025)} = 240$

7. z

8. z

9.  $f^{-1}(x) = 4 - x^2$ .  $x \geq 0$

10. Let  $y = 2 \cos\left(\frac{3x}{2} + \pi\right) - 3$ . (a) period,  $4\pi/3$  (b) domain:  $(-\infty, \infty)$  range.  $(-1, -5)$

11. z

12. ,