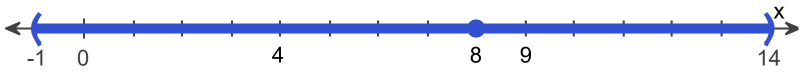
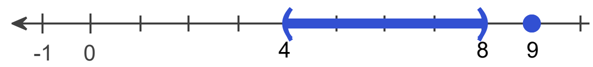
Student: ____________________	**Instructor:** Carlos Sotuyo	**Assignment:** Section 2.3 The Precise
Date: ____________________	**Course:** MAC2311 Calculus I	Definition of a Limit

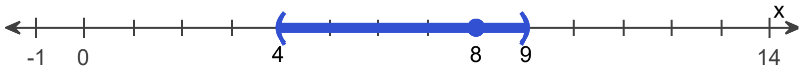
1. Sketch the interval (a,b) on the x-axis with the point c inside the interval. Then find the largest value of $\delta > 0$ such that for all x, $a < x < b$ whenever $0 < |x - c| < \delta$.

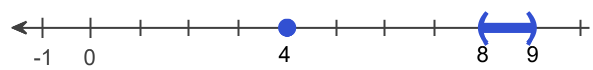
   $a = 4, \quad b = 9, \quad c = 8$

   Sketch the interval (a,b) on the x-axis with the point c inside the interval. Choose the correct answer below.

   ○ **A.**


   ○ **B.**


   ○ **C.**


   ○ **D.**


   The largest value of δ is 1.
   (Type an exact answer in simplified form.)

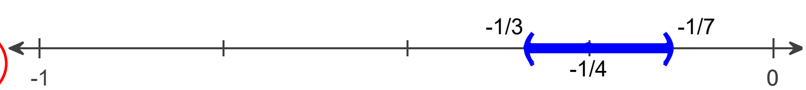
2. Sketch the interval (a,b) on the x-axis with the point c inside. Then find the largest value of $\delta > 0$ such that for all x, $0 < |x - c| < \delta$ implies $a < x < b$.

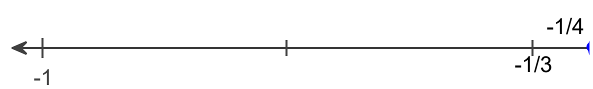
   $a = -\frac{1}{3}, \; b = -\frac{1}{7}, \; c = -\frac{1}{4}$

   Choose the correct sketch below.

   ○ **A.**


   ○ **B.**


   ○ **C.**


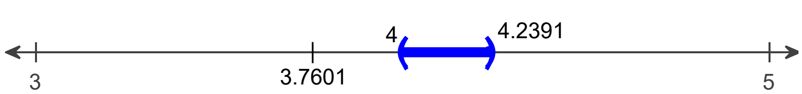
   ○ **D.**


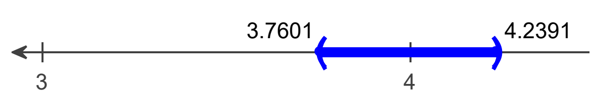
   The largest possible value for δ is 1/12.
   (Type an integer or a simplified fraction.)

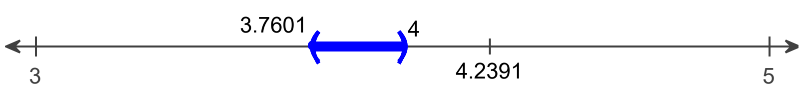
3. Sketch the interval (a,b) on the x-axis with the point c inside. Then find the largest value of $\delta > 0$ such that for all x, $0 < |x - c| < \delta$ implies $a < x < b$.

   $a = 3.7601, \quad b = 4.2391, \quad c = 4$

   Choose the correct sketch below.

   ○ **A.**


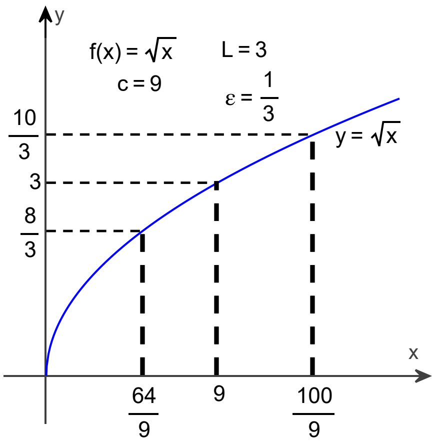
   ○ **B.**


   ○ **C.**


   ○ **D.**


   The largest possible value for δ is 0.2391.
   (Type an exact answer.)

4. Use the graph below to find the largest value of $\delta > 0$ such that for all x, $|f(x) - L| < \varepsilon$ whenever $0 < |x - c| < \delta$.



The largest value of δ is 17/9.
(Simplify your answer. Type an exact answer. Type an integer or a fraction.)

5. For the given function f(x) and values of L, c, and $\varepsilon > 0$ find the largest open interval about c on which the inequality $|f(x) - L| < \varepsilon$ holds. Then determine the largest value for $\delta > 0$ such that for all x satisfying $0 < |x - c| < \delta$, the inequality $|f(x) - L| < \varepsilon$ holds.

$f(x) = 5x + 7, \quad L = 37, \quad c = 6, \quad \varepsilon = 0.05$

The largest open interval about c on which the inequality $|f(x) - L| < \varepsilon$ holds is (5.99, 6.01).
(Type integers or decimals.)

The largest value of $\delta > 0$ such that for all x satisfying $0 < |x - c| < \delta$, the inequality $|f(x) - L| < \varepsilon$ holds is 0.01.
(Simplify your answer. Type an integer or a decimal.)

6. For the given function f(x) and values of L, c, and $\varepsilon > 0$ find the largest open interval about c on which the inequality $|f(x) - L| < \varepsilon$ holds. Then determine the largest value for $\delta > 0$ such that for all x satisfying $0 < |x - c| < \delta$, the inequality $|f(x) - L| < \varepsilon$ holds.

$f(x) = \sqrt{19x + 26}, \quad L = 11, \quad c = 5, \quad \varepsilon = 0.07$

The largest open interval about c on which the inequality $|f(x) - L| < \varepsilon$ holds is (4.9192, 5.0813).
(Round to four decimal places as needed.)

The largest value of $\delta > 0$ such that for all x satisfying $0 < |x - c| < \delta$, the inequality $|f(x) - L| < \varepsilon$ holds is is 0.0808.
(Simplify your answer. Round to four decimal places as needed.)

7. For the given function f(x) and numbers L, c, and $\varepsilon > 0$, find the largest open interval about c on which the inequality $|f(x) - L| < \varepsilon$ holds. Then give the largest value of $\delta > 0$ such that for all x satisfying $0 < |x - c| < \delta$ the inequality $|f(x) - L| < \varepsilon$ holds.

$f(x) = \sqrt{20 - x}$, $L = 1$, $c = 19$, $\varepsilon = 1$

The largest open interval about c on which the inequality $|f(x) - L| < \varepsilon$ holds is (16, 20).
(Type integers or decimals.)

Find the largest value $\delta > 0$ such that for all x satisfying $0 < |x - c| < \delta$ the inequality $|f(x) - L| < \varepsilon$ holds.

$\delta =$ 1 (Simplify your answer. Type an integer or a decimal.)

8. For the given function f(x) and values of L, c, and $\varepsilon > 0$ find the largest open interval about c on which the inequality $|f(x) - L| < \varepsilon$ holds. Then determine the largest value for $\delta > 0$ such that for all x satisfying $0 < |x - c| < \delta$, the inequality $|f(x) - L| < \varepsilon$ holds.

$f(x) = \frac{1}{x}, \quad L = \frac{1}{8}, \quad c = 8, \quad \varepsilon = 0.01$

The largest open interval about c on which the inequality $|f(x) - L| < \varepsilon$ holds is (200/27 , 200/23).
(Type exact answers.)

The largest value of $\delta > 0$ such that $0 < |x - c| < \delta \rightarrow |f(x) - L| < \varepsilon$ is 16/27 .
(Type an exact answer.)

9. For the given function f(x) and numbers L, c, and $\varepsilon > 0$, find the largest open interval about c on which the inequality $|f(x) - L| < \varepsilon$ holds. Then give the largest value of $\delta > 0$ such that for all x satisfying $0 < |x - c| < \delta$ the inequality $|f(x) - L| < \varepsilon$ holds.

$f(x) = x^2 - 7, L = 2, c = 3, \varepsilon = 1$

The largest open interval about c on which the inequality $|f(x) - L| < \varepsilon$ holds is (2 Sqrt 2 , Sqrt 10).
(Type exact answers, using radicals as needed.)

Find the largest value of $\delta > 0$ such that for all x satisfying $0 < |x - c| < \delta$ the inequality $|f(x) - L| < \varepsilon$ holds.

$\delta =$ Sqrt 10 - 3

Note: Sqrt stands for square root of...; also, Sqrt 8 simplifies to 2 Sqrt 2.

(Simplify your answer. Type an exact answer, using radicals as needed.)

10. For the given function f(x), the point c, and a positive number ε, find $L = \lim_{x \to c} f(x)$. Then find the largest value of $\delta > 0$ such that $|f(x) - L| < \varepsilon$ whenever $0 < |x - c| < \delta$.

$f(x) = 6 - 4x, c = 5, \varepsilon = 0.01$

L = -14 (Simplify your answer.)

What is the largest possible value for δ?

$\delta =$ 0.0025 (Type an exact answer in simplified form.)

11. For the given function f(x) and the given values of c and $\varepsilon > 0$, find $L = \lim_{x \to c} f(x)$.

Then determine the largest value for $\delta > 0$ such that $|f(x) - L| < \varepsilon$ whenever $0 < |x - c| < \delta$.

$f(x) = \frac{x^2 - 169}{x - 13}, \quad c = 13, \quad \varepsilon = 0.07$

Notice: Only questions 1 tru 10 on MyMathLab HW

The value of L is ________.
(Simplify your answer.)

The largest value of $\delta > 0$ such that $|f(x) - L| < \varepsilon$ whenever $0 < |x - c| < \delta$ is ________.
(Simplify your answer. Round to the nearest hundredth as needed.)

12. For the given function f(x), the point c, and a positive number ε, find $L = \lim_{x \to c} f(x)$. Then find the largest value of $\delta > 0$ such that $|f(x) - L| < \varepsilon$ whenever $0 < |x - c| < \delta$.

$f(x) = \sqrt{8 - 8x}, c = -1, \varepsilon = 0.2$

L = ________ (Simplify your answer.)

What is the largest possible value for δ?

$\delta =$ ________ (Type an exact answer in simplified form.)