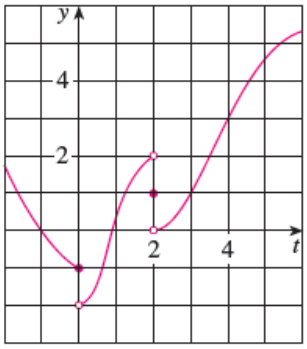
HW #3: Chapter 2.2 (6367093)

Current Score: 0/44 **Due:** Tue Oct 7 2014 11:59 PM PDT

Question	1	2	3	4	5	6	7	8	Total
Points	0/8	0/4	0/4	0/4	0/5	0/5	0/8	0/6	0/44

1. 0/8 points SCalcET7 2.2.007. [1608996]

For the function g whose graph is given, state the value of each quantity, if it exists. (If an answer does not exist, enter DNE.)



(a) $\lim_{t \to 0^-} g(t)$

(b) $\lim_{t \to 0^+} g(t)$

(c) $\lim_{t \to 0} g(t)$

(d) $\lim_{t \to 2^-} g(t)$

(e) $\lim_{t \to 2^+} g(t)$

(f) $\lim_{t \to 2} g(t)$

(g) $g(2)$

(h) $\lim_{t \to 4} g(t)$

2. 0/4 points SCalcET7 2.2.029. [1633303]

Determine the infinite limit.

$$\lim_{x \to -2^+} \frac{x + 1}{x + 2}$$

- ○ ∞
- ○ $-\infty$

3. 0/4 points SCalcET7 2.2.031. [1633309]

Determine the infinite limit.

$$\lim_{x \to 3} \frac{2 - x}{(x - 3)^2}$$

- ○ ∞
- ○ $-\infty$

4. 0/4 points SCalcET7 2.2.046. [1633295]

In the theory of relativity, the mass of a particle with velocity v is

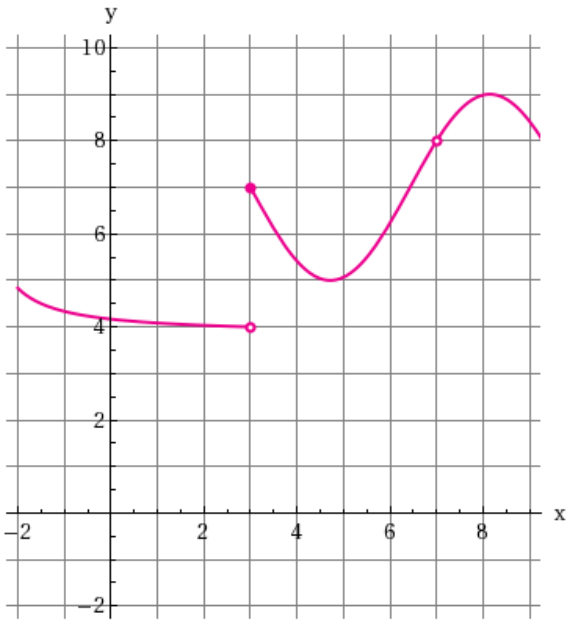
$$m = \frac{m_0}{\sqrt{1 - v^2/c^2}},$$

where m_0 is the mass of the particle at rest and c is the speed of light. What happens as $v \to c^-$?

- ○ $m \to -\infty$
- ○ $m \to 0$
- ○ $m \to \infty$
- ○ $m \to m_0$

5. 0/5 points SCalcET7 2.2.503.XP.MI. [1886877]

Use the given graph of f to state the value of each quantity, if it exists. (If an answer does not exist, enter DNE.)



(a) $\lim_{x \to 3^-} f(x)$

(b) $\lim_{x \to 3^+} f(x)$

(c) $\lim_{x \to 3} f(x)$

(d) $\lim_{x \to 7} f(x)$

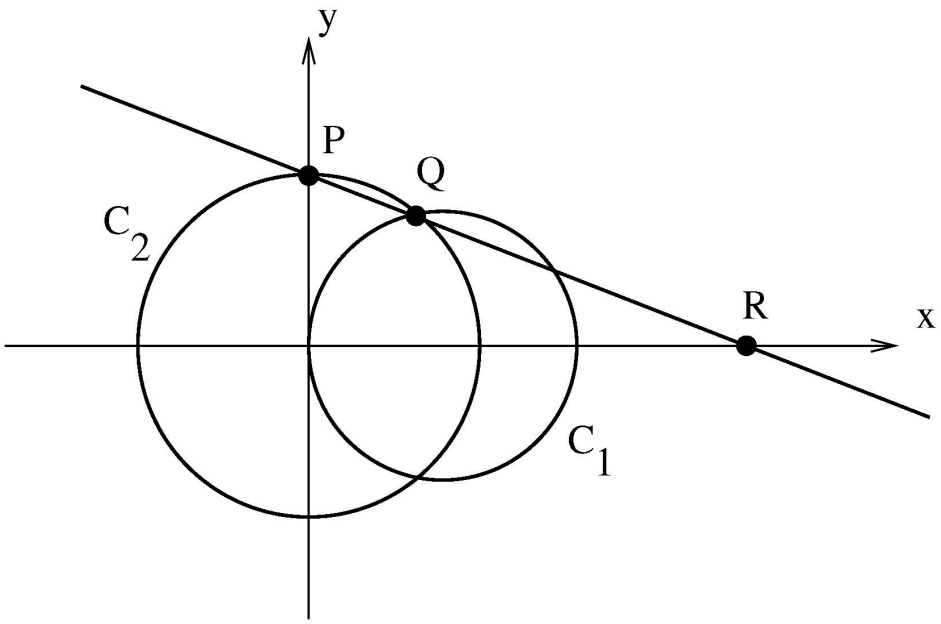
(e) $f(7)$

6. 0/5 points numericallimit1 [2603871]

Consider $\lim_{t \to 0^+} \left(\frac{-2 \sin(8t)}{\sin(8t) + 2t \cos(8t)}\right)$. Using a table of values, the limiting value is (Enter "DNE" if the limit does not exist.)

7. 0/8 points shrinkingcircle [1234037]

The figure below shows a fixed circle C_1 with equation $(x - 1)^2 + y^2 = 1$ and another shrinking circle C_2 centered at the origin with positive y-intercept $P=(0,r)$. Let Q be the point of intersection between the two circles pictured, draw a line through P and Q and let R be the x-intercept of that line.



(a) Find the coordinates of the point Q; your answers will involve r: $Q=$ (,).

(b) The line through P and Q has equation

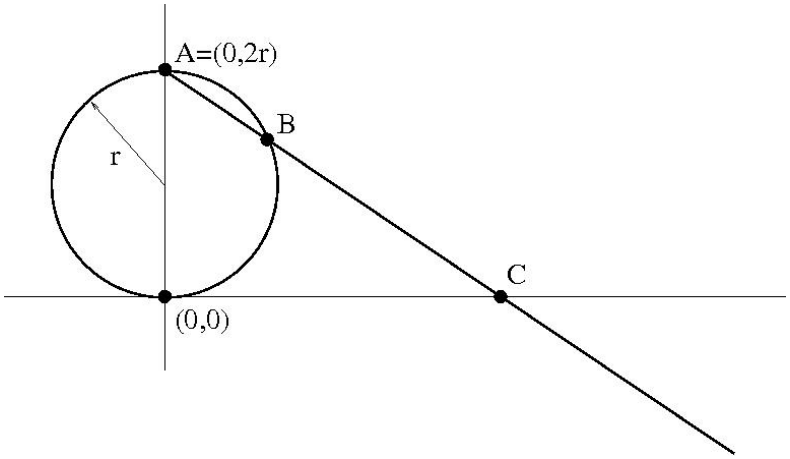
y= x + .

(c) The point $R=$(,).

(d) $\lim_{r\to 0} R$ = (,).

8. 0/6 points circlelinerace [1743306]

A circle of radius r centered at the point (0,r) in the plane will intersect the y-axis at the origin and the point A=(0,2r), as pictured below. A line passes through the point A and the point C=($5r^2$,0) on the x-axis. In this problem, we will investigate the coordinates of the intersection point B between the circle and the line, as $r \to \infty$



(a) The line through A and C has equation:

y= x +

(b) The x-coordinate of the point B is .

(c) The y-coordinate of the point B is .

(d) The limit as $r \to \infty$ of the x-coordinate of B is (if your answer is ∞, write infinity).

(e) The limit as $r \to \infty$ of the y-coordinate of B is (if your answer is ∞, write infinity).

Assignment Details