HW Quiz B: MVT and L'hopitals Rule Name_____

Give an appropriate answer.

1) Find the value or values of c that satisfy the Mean Value Theorem for the function $f(x) = x^2 + 4x + 1$ on the interval $[-3, 2]$.

2) Ben rides a unicycle back and forth along a straight east-west track. The twice-differentiable functio B models Ben's position of the track, measured in meters from the western end of the track, at time t measured in seconds from the start of the ride. The table gives values of B(t) measured in meters at selected times t.

t(seconds)	0	10	40	60
B(t) (meters)	100	140	19	49

For $0 \le t \le 12$, must there be a time t when Ben's velocity is 4 meters per second? Justify your answer.

Use l'Hopital's Rule to evaluate the limit.

3) $\lim_{x \to 0} \frac{\sin(9x)}{x}$

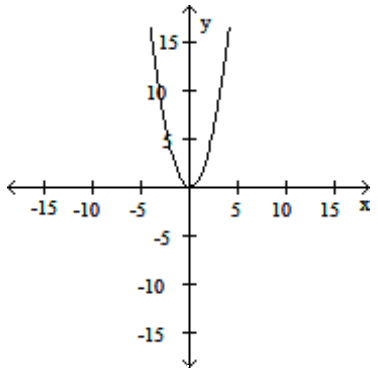
4) $\lim_{x \to 9} \frac{x^2 - 81}{x + 9}$

Use l'Hopital's rule to find the limit.

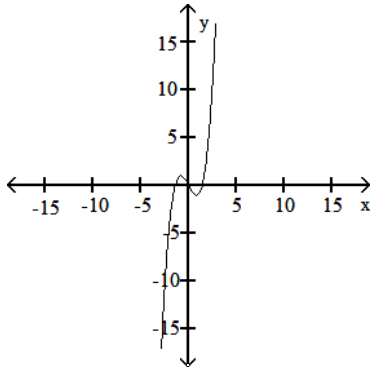
5) $\lim_{\theta \to 0} \frac{7 - 7\cos\theta}{\sin 5\theta}$

The graph of a function is given. Sketch a graph of the functions derivative.

6)



7) The graph of the derivative of a function is given. Sketch a graph of the function.



Solve the problem.

8) At time $t \geq 0$, the velocity of a body moving along the s-axis is $v = t^2 - 11t + 10$. Describe the motion of the particle. Justify your answer.