

Quiz #7

Directions: Carefully read each question below and answer to the best of your ability in the space provided. You **MUST** show your work to receive full credit! Your answer to problem # 2 should be written in a clear and concise manner using a combination of complete sentences and symbolic expressions. An answer without explanation or that is poorly presented may not receive full credit.

1. (1 point) Two cars start moving from the same point. One travels south at 60 mi/hr and the other travels west at 25 mi/hr. At what rate is the distance between the cars increasing two hours later?

A. 65

B. 130

C. 170

D. $\sqrt{8450}$

E. None of the above.

2. (2 points) Find the absolute maximum and absolute minimum values of $f(x)$ on the given interval:

$$f(x) = 2(x - 3)^5 + 7 \quad \text{on} \quad [-2, 2].$$

Solution: First, let's find all possible critical point, so take derivative of f and set it equals to zero. That's

$$\frac{df}{dx} = 10(x - 3)^4 = 0.$$

Thus $x = 3$ is a critical point, but $3 \notin [-2, 2]$, thus f doesn't have any critical points on $[-2, 2]$. Thus

$$f(-2) = 2(-2 - 3)^5 + 7 = \boxed{-6243} \text{ - absolute maximum}$$

$$f(2) = 2(2 - 3)^5 + 7 = \boxed{5} \text{ - absolute maximum.}$$

Name: _____

Question:	1	2	Total
Points:	1	2	3
Score:			