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

Unit 2 LT 2 Quiz 1

1. What is Rolle’s Theorem?
2. What is the Mean Value Theorem?
3. The table below shows certain values for the differentiable function *f(x)* on

[-2,7]. Use a theorem to explain why there must be some value, *c*, in the interval [-2,7] such that *f ‘ (c)* = 0.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *x* | -2 | 2 | 5 | 6 | 7 |
| *f(x)* | -4 | 7 | 9 | 1 | -4 |

1. The table below shows certain values for the differentiable function *f(x)* on

[4,11]. Use a theorem to explain why there must be some value, *c*, in the interval [4,11] such that *f ‘ (c)* = 3.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *x* | 4 | 6 | 7 | 10 | 11 |
| *f(x)* | 1 | -5 | -1 | 12 | 22 |

1. A runner in a race passes two checkpoints. At 1:00 pm he arrived at the first checkpoint going 10 mph. 4 miles later, the runner arrived at the second checkpoint at 2:00 pm going 8 mph.
2. Prove that at some point the runner must have been running at 4 mph.
3. Prove that at some point the runner’s velocity must have been slowing down at the rate of 2 miles per hour per hour.

Also do p. 242# 5 – 12