

Name : _____

140 - Calculus I: Test 3 Extra Credit

DIRECTIONS: Show all work! There is a total of 10 points which will be added to Test 3.

1. (2 points) Use Rolle's Theorem to explain why there is at least one point between $t=0$ and $t=3\pi$ where $f'(t)$ is zero where:

$$f(t) = \sin(3t) + 4$$

2. (3 points) Show where the following function is concave up and concave down. Write answers in interval notation.

$$f(x) = 2x^3 - 3x^2 + 8x - 13$$