D-AD7 Practice Assessment Given below is the graph of f' the first derivative of f. Use it to answer #1 and 2. Over what interval(s) is f decreasing? Explain in detail. 1. 6 5

Where, if anywhere, does f achieve a relative minimum? Justify your response.

D-AD8

-5

-3 -2 -1 0

-4

3

2

0

-1 -2

3. Find the absolute extrema of $f(x) = 2x^3 - 6x - 2$ over the interval [-4,0].

2.

4 5

3

4. Find and classify all relative maxima and relative minima of $f(x) = -x^3 + 3x^2 + 2$. Justify your classifications.

D-AD9

5. For what interval(s) is the function $f(x) = x^3 + 3x^2 - 9x + 7$ increasing? Justify your answer.

D-CD8

6. Find the value of c guaranteed to exist by the Mean Value Theorem for $f(x) = x^3 - 2x^2$ over [0,2].

7. Find the value of c guaranteed to exist by the Mean Value Theorem for $f(x) = \sqrt{x}$ over [0,4]

D-AD17

8. The position, in feet, of a particular moving body is modeled as a differentiable function of time, in seconds, by $s(t) = 3 \sin 2t - 4 \cos 5t$. Find the initial velocity and acceleration of the object. Include units in your answer.

9. The position of a moving body is given by $f(x) = x^3 - 2x^2 - 5x - 1$ where f is in meters and x is in seconds. Find the velocity of the object when the acceleration is 0. Include units in your answer.