### D-AD10

# Practice Assessment

1. Shown here is the graph of the <u>first derivative</u> of some function f(x). Is f concave up or concave down over the interval (3,4)? Justify your response.



2. Using the above graph, give an interval for which f is decreasing but concave up.

For 3 and 4, refer to the function  $f(x) = 5x^4 - x^5$ . Calculations/analysis do <u>not</u> need to be repeated if you need to make reference to the other problem.

# D-AD11

3. Find any inflection points for the function f(x). Justify your response.

# D-AD12

4. Find the interval(s) over which f(x) is concave up. Justify your response.

#### D-AD13

5. Find any intervals for which  $f(x) = 2x^4 - 4x^2 - 3$  is decreasing and concave up. Show the calculations that lead to your conclusion.

# D-AD7

6. Shown here is f'(x) the first derivative of f(x). Give any interval(s) where f(x) is increasing. Justify.



7. Does f(x) have any relative minima? If so, give the x-coordinate. If not, explain why not.

- 8. Find the absolute extrema for  $f(x) = -x^3 + 2x^2 + 4$  on the interval [-1,1]
- 9. Find and classify any relative extrema. Justify your classifications.  $f(x) = -x^4 + 2x^2 4$

# D-AD9

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