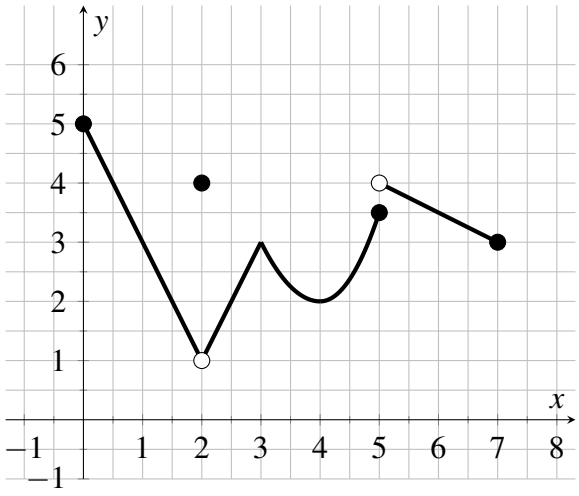
Name: _____ _____ **/ 25**

Circle one: Rhodes (F01) | Bueler (F02)

25 points possible. No aids (book, calculator, etc.) are permitted. You need not simplify, but show all work and use proper notation for full credit.

1. [4 points] Use the graph to state all the absolute and local maximum and minimum values of the function.



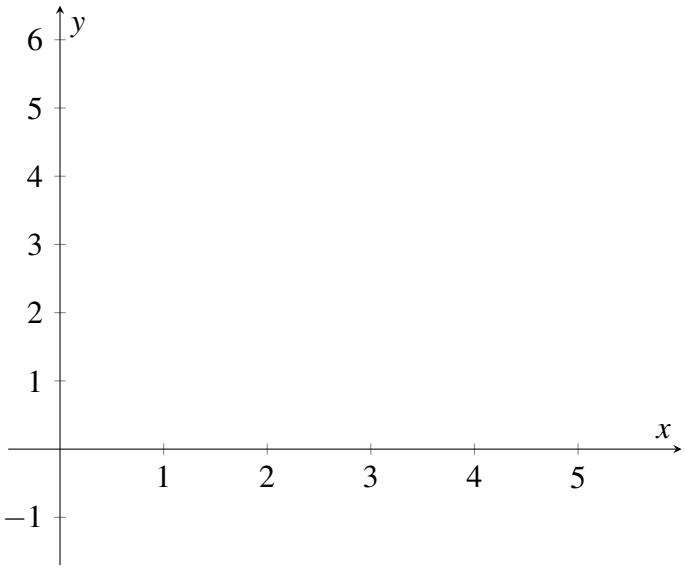
2. [7 points] Find the absolute maximum and absolute minimum values of f on the given interval.

$$f(x) = 1 + 24x - 2x^3, \quad [0,3]$$

3. [8 points] Suppose f is continuous on $[0,4]$ and has a derivative at each point in $(0,4)$. Suppose $f(0) = 5$ and $f(4) = -1$.

a. What specifically does the Mean Value Theorem let you conclude?

b. Draw a diagram that illustrates the Mean Value Theorem for this problem. Your illustration should include a tangent line somewhere.



4. [6 points] Find the critical numbers (critical points) of the function.

$$g(t) = t^2 e^{-3t}$$