Name _____

Homework 5
Sections 2.5 & 2.6

1. (5) Number 28 on page 104 of the textbook.

   (a) _____

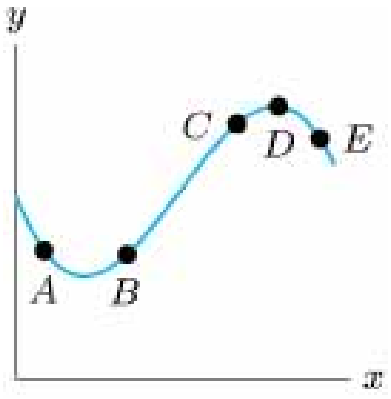
   (b) _____

   (c) _____

   (d) _____

   (e) _____

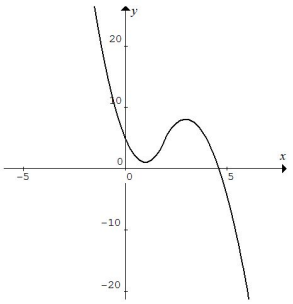
2. (5) Use the graph to complete the table with the signs (positive, negative or zero) of $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ at each of the labeled points. *Modified from the textbook page 102, number 2.*



Point	$\frac{dy}{dx}$	$\frac{d^2y}{dx^2}$
A		
B		
C		
D		
E		

Make sure you use the definition of differentiable (i.e. there needs to be some limits) for numbers 3 and 4.

3. (5) Determine whether the function $f(x) = \begin{cases} 4(x-1)^2 + 1 & \text{for } x \leq 2 \\ -3(x-3)^2 + 8 & \text{for } x > 2 \end{cases}$ is differentiable at $x = 2$. If so, find $f'(2)$. The graph of $f(x)$ is shown below.



4. (5) Determine whether or not the function $g(x) = (x + |x|)^2 - 1$ is differentiable at $x = 0$. If so, find $g'(0)$.