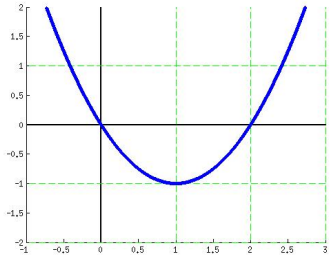
MATH 135: Quiz 4

September 30, 2014

Name: _____ Sec: _____

1. For each of the functions graphed below, answer whether or not the function is differentiable **at x=2**. If it is differentiable, then circle + (positive), - (negative), or 0 (zero) for the sign of the derivative **at x=2**. Sketching a tangent line may help.

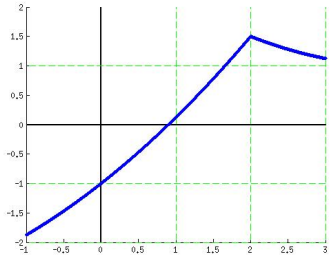
(a)



Differentiable: Yes / No

Sign of Derivative: + / - / 0

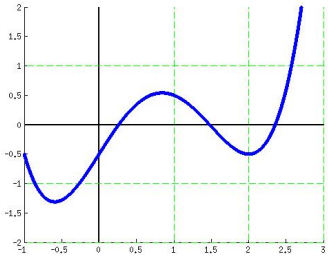
(b)



Differentiable: Yes / No

Sign of Derivative: + / - / 0

(c)



Differentiable: Yes / No

Sign of Derivative: + / - / 0

2. Find the derivative of $f(x) = x^2 + 2x$ using the definition of derivative. Do not use any tricks for finding derivatives (power rule etc.).

3. Find the derivatives of the functions $f(x)$ and $g(x)$ below. You can use all derivative rules here. Please show all steps so I know what rules (product, quotient, etc.) that you are applying.

$$f(x) = e^x \left(\sin(x) - x^2\right) \qquad\qquad g(x) = \frac{x^5 + 3x^2 + 2}{x^{2/3}}$$