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.

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