

Section:

Follow the instructions in each problem.

Show supporting work, not just a final answer, to receive credit on a problem.

1. (5 pts) Let $f(x) = x^3 - 9x$. Find the x -values where the graph of $f(x)$ has a horizontal tangent line. (Hint: the slope of a horizontal line is 0).

$$f'(x) = 3x^2 - 9$$

$$f'(x) = 0 = 3x^2 - 9 \Rightarrow x^2 = 3$$

$$\Rightarrow x = \pm \sqrt{3}$$

2. (5 pts) Find the derivative of $f(x) = \frac{e^x}{\ln(x) + 3}$. You do not need to simplify your answer.

$$f'(x) = \frac{e^x (\ln(x) + 3) - e^x \cdot \left(\frac{1}{x}\right)}{(\ln(x) + 3)^2}$$