Note, none of these questions required you to calculate a derivative directly from the definitions, which I interpreted as giving you a break.

1. Find the limit: \( \lim_{x \to 3} \frac{(x^2 - 9)}{(x - 3)(x + 4)} \)

   To solve this one, factor the top, and cancel factors:
   \[
   \lim_{x \to 3} \frac{(x + 3)(x - 3)}{(x - 3)(x + 4)} = \lim_{x \to 3} \frac{x + 3}{x + 4} = \frac{6}{7}
   \]

2. Find the first derivative of the function \( f(x) = \frac{e^x}{x} \)

   This one relies on using the quotient rule.
   \[
   f'(x) = \frac{e^x \cdot x - e^x \cdot 1}{x^2} = \frac{e^x(x - 1)}{x^2}
   \]

3. Find the equation of the line tangent to the function \( g(x) = 6x^{13} - 2x + 1 \) at the point \( x = 1 \).

   First you need to find the slope, and a point on the line, and then you will use these pieces of information to find the equation of the line itself.

   **Slope:** \( g'(x) = 13 \cdot 6 \cdot x^{12} - 2 = 78x^{12} - 2; \) thus, \( g'(1) = 78(1)^{12} - 2 = 76. \)

   **Point:** \( g(1) = 6(1)^{13} - 2(1) + 1 = 6 - 2 + 1 = 5 \)

   **Equation:** \( y - 5 = 76(x - 1), \) so \( y = 76x - 71 \)