(A) Let \( f(x) = 12 \ln \left( \frac{13}{x} \right) \). Find \( f'(x) \). Hint: Start by rewriting \( f \) using a rule of logarithms.

(B) Let \( f(x) = 12 \ln(x^{13}) \). Find \( f'(x) \). Hint: Start by rewriting \( f \) using a rule of logarithms.

(C) Let \( f(x) = 12x \ln(13) \). Find \( f'(x) \).

(D) The goal is to find the equation of the line tangent to the graph of the function

\[
f(x) = 5 + \ln(x^3)
\]

at the point where \( x = e^2 \).

Remember that the approach is to build the general form of the equation for the tangent line (in point-slope form):

\[
(y - f(a)) = f'(a) \cdot (x - a)
\]

Question (D) continues on back. ➔
Get Parts

Identify the number $a$.

Find $f(a)$.

Find $f'(x)$. Hint: Start by rewriting $f$ using a rule of logarithms.

Find $f'(a)$.

Substitute Parts Into the General Tangent Line Equation

Convert the Equation to Slope Intercept Form