Now evaluate at $x=1$.

$$f'(1) = (2+3\cdot 1)' \cdot \left[\ln(2+3\cdot 1) + \frac{3\cdot 1}{2+3\cdot 1} \right]$$

$$\boxed{5'(1) = 5 \cdot \left[\ln(5) + \frac{3}{5} \right]}$$

OR

$$f'(1) = 5\ln 5 + \cancel{5}\cdot\frac{3}{\cancel{5}}$$

$$\boxed{f'(1) = 5\ln 5 + 3}$$

OR

$$\boxed{f'(1) \approx 11.05}$$

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4. (n/c) Solve

$$\ln(4e^x) + \ln(2\cdot e^{3x}) = \ln 16$$

$$\ln(4\cdot e^x \cdot 2\cdot e^{3x}) = \ln 16$$

$$\ln(8\cdot e^x \cdot e^{3x}) = \ln 16$$

$$\ln(8\cdot e^{4x}) = \ln 16$$

$$8\cdot e^{4x} = 16$$

$$e^{4x} = 2$$

$$\ln e^{4x} = \ln 2$$

$$4x = \ln 2$$

$$x = \frac{\ln(2)}{4}$$

$$\boxed{x = 0.1733}$$ (6)