[I] (2pts) Fill in the boxes.

\[ 8^x = 5 \quad \text{and} \quad 13^x = e \]

[II] (2pts) Fill in the boxes.

\[ 9 = 4 \quad \text{and} \quad 22 = e \]

[III] (2pts) Write each of the following in the form \( \log \).

(a) \( \frac{1}{\log_7 6} = \log \) \( \quad \)

(b) \( \frac{1}{\log_{18} 31} = \log \) \( \quad \)

[IV] (4pts) Simplify

(1) \( \log_3 27 = \quad \)

(2) \( \log_{10} 100000 = \quad \)

(3) \( \log_5 \left( \frac{1}{625} \right) = \quad \)

(4) \( \log_4 \left( \frac{1}{1024} \right) = \quad \)
[V] (2pts) Simplify

(1) \( \log_5 5\sqrt{7} = \) \hspace{1cm} (2) \( e^{\ln 16} = \) \hspace{1cm}.

[VI] (2pts) Fill in the boxes

(1) \( \frac{\log_3 7}{\log_3 4} = \log \square \square \). \hspace{1cm} (2) \( \frac{\log_7 41}{\log_7 e} = \ln \square \).

[VII] (8pts)

(1) \( (\ln 100) - (\ln 20) = \ln \square \).

(2) \( 2 \ln 3 = \ln \square \).

(3) \( \ln 243 = \square (\ln 3) \).

(4) \( \ln 5\sqrt{128} = \square (\ln 2) \).

(5) Simplify: \( e^{\ln 4 + (\ln 11)} = \) \hspace{1cm}.

(6) Simplify: \( e^{3 (\ln 2)} = \) \hspace{1cm}.

(7) Simplify: \( \ln 8^{\frac{1}{\ln 8}} = \) \hspace{1cm}.

(8) Simplify: \( 8^{\frac{1}{\ln 8}} = \) \hspace{1cm}.

\( \frac{1}{2} \)