1. **Question Details**  

Identify $u$ and $dv$ for finding the integral using integration by parts. (Do not evaluate the integral.)  

\[ \int x^3 e^{4x} \, dx \]

\[ u = \quad \]
\[ dv = e^{4x} \, dx \]

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2. **Question Details**

Use integration by parts to find the indefinite integral.

\[ \int x^8 \ln x \, dx \]

\[ + C \]

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3. **Question Details**

Use integration by parts to find the indefinite integral.

\[ \int x^2 \sqrt{x - 8} \, dx \]

\[ + C \]

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4. **Question Details**

Use integration by parts to find the indefinite integral.

\[ \int \frac{5x}{e^x} \, dx \]

\[ + C \]

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5. **Question Details**

Find the indefinite integral.

\[ \int \frac{1}{7} x^3 e^x \, dx \]

\[ + C \]
6. Find the indefinite integral.
\[ \int \frac{1}{x(\ln x)^6} \, dx \]
\[ + C \]

7. Use integration by parts to evaluate the definite integral.
\[ \int_{0}^{8} \frac{x}{e^{x/4}} \, dx \]

8. Find the area of the region bounded by the graphs of the equations. Use a graphing utility to verify your results.
\[ y = \frac{6 \ln x}{7x^4}, \quad y = 0, \quad x = 1, \quad x = e \]

9. Find the present value of the income \( c \) (in dollars) over \( t_1 \) years at the given annual inflation rate \( r \). (Round your answer to two decimal places.)
\[ c = 450, \quad r = 6\%, \quad t_1 = 8 \text{ years} \]
\[ $ \]

10. Find the present value of the income \( c \) (in dollars) over \( t_1 \) years at the given annual inflation rate \( r \). (Round your answer to two decimal places.)
\[ c = 27,000 + 100t, \quad r = 7\%, \quad t_1 = 5 \text{ years} \]
\[ $ \]

11. Find the indefinite integral.
\[ \int \frac{t}{\sqrt{1-t^2}} \, dt \]
\[ + C \]
12. Question Details

Find the indefinite integral.

\[ \int \frac{e^x}{1+e^x} \, dx \]

\[ \text{ } + C \]

13. Question Details

Evaluate the definite integral.

\[ \int_{0}^{1} x(x+2)^3 \, dx \]

14. Question Details

Write the partial fraction decomposition for the expression.

\[ \frac{13x + 8}{x^2 + x} = \frac{\boxed{\text{}}}{x} + \frac{\boxed{\text{}}}{x+1} \]

15. Question Details

Find the indefinite integral.

\[ \int \frac{7}{x^2 - 7x} \, dx \]

\[ \text{ } + C \]

16. Question Details

Evaluate the definite integral.

\[ \int_{0}^{1} \frac{x^2 - x}{x^2 + x + 1} \, dx \]