

Name : _____

Score : _____

Teacher : _____

Date : _____

Integration by Parts

Find each indefinite integral using the substitution provided.

1) $\int e^x \sin(x) dx$

$u = \sin(x); dv = e^x dx$

2) $\int x^2 \sin(10x) dx$

$u = x^2; dv = \sin(10x) dx$

3) $\int (5x + 6) \cos\left(\frac{x}{2}\right) dx$

$u = 5x + 6; dv = \cos\left(\frac{x}{2}\right) dx$

4) $\int x e^x dx$

$u = x; dv = e^x dx$

5) $\int x \cdot 5^x dx$

$u = x; dv = 5^x dx$

6) $\int x \sqrt{x + 13} dx$

$u = x; dv = \sqrt{x + 13} dx$

7) $\int x \cos(x) dx$

$u = x; dv = \cos(x) dx$

8) $\int \ln(x) dx$

$u = \ln(x); dv = \ln(x) dx$



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Integration by Parts

Find each indefinite integral using the substitution provided.

1) $\int e^x \sin(x) dx$

$u = \sin(x); dv = e^x dx$

$\frac{1}{2} e^x (\sin(x) - \cos(x)) + C$

2) $\int x^2 \sin(10x) dx$

$u = x^2; dv = \sin(10x) dx$

$\frac{-x^2 \cos(10x)}{10} + \frac{x \sin(10x)}{50} + \frac{\cos(10x)}{500} + C$

3) $\int (5x + 6) \cos\left(\frac{x}{2}\right) dx$

$u = 5x + 6; dv = \cos\left(\frac{x}{2}\right) dx$

$(10x + 12) \sin\left(\frac{x}{2}\right) + 20 \cos\left(\frac{x}{2}\right) + C$

4) $\int x e^x dx$

$u = x; dv = e^x dx$

$e^x(x - 1) + C$

5) $\int x \cdot 5^x dx$

$u = x; dv = 5^x dx$

$\frac{5^x(x \ln(11) - 1)}{(\ln(5))^2} + C$

6) $\int x \sqrt{x + 13} dx$

$u = x; dv = \sqrt{x + 13} dx$

$\frac{2}{15} (x + 13)^{\frac{3}{2}} (3x - 26) + C$

7) $\int x \cos(x) dx$

$u = x; dv = \cos(x) dx$

$x \sin(x) + \cos(x) + C$

8) $\int \ln(x) dx$

$u = \ln(x); dv = \ln(x) dx$

$x \ln(x) - x + C$

