



## Lesson 7-2 Integration by Parts

1- Evaluate  $\int x \cos x \, dx$

- A-  $= x \sin x - \cos x + c$
- B-  $= x \sin x + \cos x + c$
- C-  $= x \cos x + \sin x + c$
- D-  $= -x \sin x + \cos x + c$

2- Evaluate  $\int x \sin 4x \, dx$

- A-  $= \frac{-1}{4}x \cos x + \frac{1}{16} \sin 4x + c$
- B-  $= \frac{1}{4}x \cos 4x - \frac{1}{16} \sin 4x + c$
- C-  $= \frac{-1}{4}x \cos 4x + \frac{1}{4} \sin 4x + c$
- D-  $= \frac{-1}{4}x \cos 4x + \frac{1}{16} \sin 4x + c$

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3- Evaluate  $\int x e^{2x} \, dx$

- A-  $= \frac{1}{2}x e^{2x} - \frac{1}{4}e^{2x} + c$
- B-  $= \frac{1}{4}x e^{2x} - \frac{1}{4}e^{2x} + c$
- C-  $= \frac{1}{2}x e^{2x} - \frac{1}{2}e^{2x} + c$
- D-  $= \frac{1}{2}x e^{2x} - e^{2x} + c$

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4- Evaluate  $\int x \ln x \, dx$

- A-  $= \frac{1}{4}x^2 \ln x - \frac{1}{4}x^2 + c$
- B-  $= \frac{1}{2}x^2 \ln x + \frac{1}{4}x^2 + c$
- C-  $= \frac{1}{4}x^2(2 \ln x - 1) + c$
- D-  $= 2x^2 \ln x + \frac{1}{4}x^2 + c$



- 5- Evaluate  $\int x^2 \ln x \, dx$
- A-  $= \frac{1}{9}x^3(3\ln x - 1) + c$
- B-  $= \frac{1}{3}x^3 \ln x - \frac{1}{9}x^2 + c$
- C-  $= \frac{1}{3}x^3(3\ln x - 1) + c$
- D-  $= 3x^3 \ln x + \frac{1}{9}x^3 + c$

- 6- Evaluate  $\int \frac{\ln x}{x} \, dx$
- A-  $= \frac{1}{2} \ln x + c$
- B-  $= \frac{1}{2} (\ln x)^2 + c$
- C-  $= x \ln x + c$
- D-  $= 2(\ln x)^2 + c$

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- 7- Evaluate  $\int x^2 e^{-3x} \, dx$
- A-  $= \frac{-1}{27} e^{-3x}(9x^2 + 2x + 2) + c$
- B-  $= \frac{1}{27} e^{-3x}(9x^2 + 6x + 2) + c$
- C-  $= \frac{-1}{27} e^{-3x}(9x^2 + 6x + 2) + c$
- D-  $= -27e^{-3x}(9x^2 + 6x + 2) + c$

- 8- Evaluate  $\int e^x \sin 4x \, dx$
- A-  $= \frac{-4}{17} e^x \cos 4x + \frac{1}{17} e^x \sin 4x + c$
- B-  $= \frac{-2}{17} e^x \cos 4x - \frac{1}{17} e^x \sin 4x + c$
- C-  $= \frac{-4}{17} e^x \cos 4x - \frac{1}{17} e^x \sin 4x + c$
- D-  $= \frac{-2}{17} e^x \cos 4x + \frac{1}{17} e^x \sin 4x + c$



9- Evaluate  $\int \cos x \cos 2x \, dx$

- A-  $= -\frac{2}{3} \cos x \sin 2x - \frac{1}{3} \cos 2x \sin x + c$   
 B-  $= \frac{2}{3} \cos x \sin 2x + \frac{1}{3} \cos 2x \sin x + c$   
 C-  $= \frac{2}{3} \cos x \sin 2x - \frac{1}{3} \cos 2x \sin x + c$   
 D-  $= -\frac{2}{3} \cos x \sin 2x + \frac{1}{3} \cos 2x \sin x + c$

10- Evaluate  $\int_0^1 x \sin 2x \, dx$

- A-  $= \frac{1}{2} \cos 2 + \frac{1}{4} \sin 2$   
 B-  $= \frac{-1}{4} \cos 2 + \frac{1}{2} \sin 2$   
 C-  $= \frac{1}{2} \cos 2 - \frac{1}{4} \sin 2$   
 D-  $= \frac{-1}{2} \cos 2 + \frac{1}{4} \sin 2$

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11- Evaluate  $\int_0^\pi 2x \cos x \, dx$

- A- -4  
 B- -2  
 C- 4  
 D- 2

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12- Evaluate  $\int_0^1 x^2 \cos \pi x \, dx$

- A-  $\frac{2}{\pi^2}$   
 B-  $-\frac{2}{\pi^2}$   
 C-  $\frac{\pi^2}{-4}$   
 D-  $\frac{1}{\pi^2}$



- 13- Evaluate  $\int x^3 e^x dx$
- A-  $= e^x(x^3 - 3x^2 + 6x - 6) + c$   
 B-  $= e^x(-x^3 - 3x^2 + 6x - 6) + c$   
 C-  $= e^x(x^3 - 3x^2 + 6x + 6) + c$   
 D-  $= e^x(x^3 + 3x^2 - 6x - 6) + c$

- 14- Evaluate  $\int \cos^3 x dx$
- A-  $= 3\cos^2 x \sin x + 2\sin x + c$   
 B-  $= \frac{1}{3}\cos^2 x \sin x - \frac{2}{3}\sin x + c$   
 C-  $= \frac{1}{3}\cos^2 x \sin x + \frac{2}{3}\sin x + c$   
 D-  $= 3\cos^2 x \sin x - 2\sin x + c$

- 15- Evaluate  $\int \cos^{-1} x dx$
- A-  $= x \cos^{-1} x + \sqrt{1 - x^2} + c$   
 B-  $= -x \cos^{-1} x - \sqrt{1 - x^2} + c$   
 C-  $= -x \cos^{-1} x + \sqrt{1 - x^2} + c$   
 D-  $= x \cos^{-1} x - \sqrt{1 - x^2} + c$

- 16- Evaluate  $\int \tan^{-1} x dx$
- A-  $= x \tan^{-1} x + 0.5\ln(1 + x^2) + c$   
 B-  $= x \tan^{-1} x - 0.5\ln(1 + x^2) + c$   
 C-  $= -x \tan^{-1} x - 0.5\ln(1 + x^2) + c$   
 D-  $= x \tan^{-1} x - 0.25\ln(1 + x^2) + c$