



Lesson 7-3 Trigonometric Techniques of Integration

1- Evaluate $\int \cos x \sin^4 x \, dx$

Choose 1 answer

A- $= -\frac{1}{5} \sin^5 x + c$

B- $= \frac{1}{5} \sin^5 x + c$

C- $= \frac{1}{5} \cos^5 x + c$

D- $= -\frac{1}{5} \cos^5 x + c$

2- Evaluate $\int \cos^3 x \sin^4 x \, dx$

Choose 1 answer

A- $= -\frac{1}{7} \sin^7 x + \frac{1}{5} \sin^5 x + c$

B- $= \frac{1}{7} \sin^7 x - \frac{1}{5} \sin^5 x + c$

C- $= -\frac{1}{7} \cos^7 x - \frac{1}{5} \sin^5 x + c$

D- $= \frac{1}{7} \sin^7 x + \frac{1}{5} \cos^5 x + c$

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3- Evaluate $\int_0^{\frac{\pi}{4}} \cos 2x \sin^3 2x \, dx$

Choose 1 answer

A- 0.4

B- 0.375

C- 0.125

D- 0.5

4- Evaluate $\int_0^{\frac{\pi}{2}} \sin x \cos^2 x \, dx$

Choose 1 answer

A- 1

B- 0.5

C- 0.667

D- 0.333



5- Evaluate $\int \cos^2(x+1) dx$

Choose 1 answer

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

6- Evaluate $\int \sin^4(x-3) dx$

Choose 1 answer

- A- $= \frac{1}{32} \sin(4x-3) - \frac{1}{4} \sin(2x-3) + \frac{3}{8}x + c$
- B- $= \frac{1}{32} \sin(4x-12) - \frac{1}{4} \sin(2x-6) + \frac{3}{8}x + c$
- C- $= \frac{1}{32} \sin(x-3) - \frac{1}{4} \sin(x-3) + \frac{3}{8}x + c$
- D- $= \frac{1}{32} \sin(4x-12) - \frac{1}{4} \sin(2x-6) + c$

7- Evaluate $\int \tan x \sec^3 x dx$

Choose 1 answer

- A- $= -\frac{1}{4} \sec^4 x + c$
- B- $= \frac{1}{4} \sec^4 x + c$
- C- $= -\frac{1}{3} \sec^3 x + c$
- D- $= \frac{1}{3} \sec^3 x + c$



8- Evaluate $\int x \tan^3(x^2 + 1) \sec(x^2 + 1) dx$

Choose 1 answer

- A- $= \frac{1}{6} \sec^3(x^2 + 1) - \frac{1}{2} \sec(x^2 + 1) + c$
- B- $= -\frac{1}{2} \sec(x^2 + 1) + c$
- C- $= \frac{1}{6} \sec^3(x^2 + 1) + \frac{1}{2} \sec(x^2 + 1) + c$
- D- $= -\frac{1}{6} \sec^3(x^2 + 1) - \frac{1}{2} \sec(x^2 + 1) + c$

9- Evaluate $\int_{-\pi/3}^0 \sqrt{\cos x} \sin^3 x dx$

Choose 1 answer

- A- $= \frac{25}{168} \sqrt{3} - \frac{11}{21}$
- B- $= \frac{25}{168} \sqrt{2} - \frac{8}{21}$
- C- $= \frac{161}{23} \sqrt{2} - \frac{19}{6}$
- D- $= \frac{168}{25} \sqrt{2} - \frac{21}{8}$

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10- Evaluate $\int_{\pi/4}^{\pi/2} \cot^2 x \csc^4 x dx$

Choose 1 answer

- A- 0.253
- B- 0.453
- C- 0.533
- D- 0.623

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11- Evaluate $\int \frac{1}{x^2\sqrt{9-x^2}} dx$

Choose 1 answer

A- $= \frac{\sqrt{9-x^2}}{9x} + c$

B- $= -\frac{\sqrt{9-x^2}}{9x} + c$

C- $= -\frac{9\sqrt{9-x^2}}{x} + c$

D- $= -\sqrt{9-x^2} + c$

12- Evaluate $\int \frac{x^2}{\sqrt{16-x^2}} dx$

Choose 1 answer

A- $= 8\sin^{-1}\left(\frac{x}{4}\right) - \frac{x\sqrt{16-x^2}}{2} + c$

B- $= \sin^{-1}\left(\frac{x}{4}\right) - \frac{\sqrt{16-x^2}}{2} + c$

C- $= 8\sin^{-1}\left(\frac{x}{4}\right) - \frac{\sqrt{16-x^2}}{2} + c$

D- $= 8\cos^{-1}\left(\frac{x}{4}\right) - \frac{x\sqrt{16-x^2}}{2} + c$

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13- Evaluate $\int \frac{x^3}{\sqrt{9-x^2}} dx$

Choose 1 answer

A- $= \frac{\cos(3\sin^{-1}(\frac{x}{3}))}{4} - \frac{3\sqrt{9-x^2}}{4} + c$

B- $= \frac{9\sin(3\sin^{-1}(\frac{x}{3}))}{4} - \frac{27\sqrt{9-x^2}}{4} + c$

C- $= 9\cos(3\sin^{-1}(\frac{x}{3})) - 27\sqrt{9-x^2} + c$

D- $= \frac{9\cos(3\sin^{-1}(\frac{x}{3}))}{4} - \frac{27\sqrt{9-x^2}}{4} + c$

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14- Evaluate $\int \frac{\sqrt{4x^2-9}}{x} dx$

Choose 1 answer

- A- $= 9\tan^{-1}\left(\frac{\sqrt{4x^2-9}}{3}\right) + \sqrt{4x^2-9} + c$
- B- $= -9\tan^{-1}\left(\frac{\sqrt{4x^2-9}}{3}\right) - \sqrt{4x^2-9} + c$
- C- $= -9\tan^{-1}\left(\frac{\sqrt{4x^2-9}}{3}\right) + \sqrt{4x^2-9} + c$
- D- $= -3\tan^{-1}\left(\frac{\sqrt{4x^2-9}}{3}\right) + \sqrt{4x^2-9} + c$

15- Evaluate $\int \frac{\sqrt{x^2-4}}{x^2} dx$

Choose 1 answer

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

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16- Evaluate $\int \frac{x^3}{\sqrt{9+x^2}} dx$

Choose 1 answer

- A- $= \sqrt{x^2+9} - \frac{2(x^2+9)\sqrt{x^2+9}}{3} + c$
- B- $= x^2\sqrt{x^2+9} - \frac{2(x^2+9)\sqrt{x^2+9}}{3} + c$
- C- $= x^2\sqrt{x^2+9} + \frac{2(x^2+9)\sqrt{x^2+9}}{3} + c$
- D- $= x^2\sqrt{x^2+9} - \frac{(x^2+9)\sqrt{x^2+9}}{3} + c$



17- Evaluate $\int x^3 \sqrt{8+x^2} dx$

Choose 1 answer

- A- $= \frac{x^2(x^2+8)\sqrt{x^2+8}}{3} - \frac{2(x^2+8)^2\sqrt{x^2+8}}{15} + c$
- B- $= \frac{x^2(x^2+8)\sqrt{x^2+8}}{3} + \frac{2(x^2+8)^2\sqrt{x^2+8}}{15} + c$
- C- $= \frac{(x^2+8)\sqrt{x^2+8}}{3} - \frac{2(x^2+8)^2\sqrt{x^2+8}}{15} + c$
- D- $= \frac{(x^2+8)\sqrt{x^2+8}}{3} + \frac{2(x^2+8)^2\sqrt{x^2+8}}{15} + c$

18- Evaluate $\int \sqrt{16+x^2} dx$

Choose 1 answer

- A- $= 8\ln(|\sqrt{x^2+16} - x|) + \frac{x\sqrt{x^2+16}}{2} + c$
- B- $= 8\ln(|\sqrt{x^2+16} + x|) - \frac{x\sqrt{x^2+16}}{2} + c$
- C- $= 8\ln(|\sqrt{x^2+16} - x|) - \frac{x\sqrt{x^2+16}}{2} + c$
- D- $= 8\ln(|\sqrt{x^2+16} + x|) + \frac{x\sqrt{x^2+16}}{2} + c$

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19- Evaluate $\int \frac{1}{\sqrt{4+x^2}} dx$

Choose 1 answer

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

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20- Evaluate $\int_0^2 x^2 \sqrt{9+x^2} dx$

Choose 1 answer

A- $= \frac{15\sqrt{13}}{4} - \frac{81}{8} \ln \left| \frac{2+\sqrt{13}}{3} \right|$

B- $= \frac{17\sqrt{13}}{4} + \frac{81}{8} \ln \left| \frac{2+\sqrt{13}}{3} \right|$

C- $= \frac{17\sqrt{13}}{4} - \frac{81}{8} \ln \left| \frac{2+\sqrt{13}}{3} \right|$

D- $= \frac{15\sqrt{13}}{4} + \frac{81}{8} \ln \left| \frac{2+\sqrt{13}}{3} \right|$

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