Chapter 2 Practice Test

Directions:

This is a 20-question practice test. It does not count toward your overall score, and you may take it as many times as you choose. Once you've completed a take, click on the **Guide** button in the **Results** section below for a study guide covering the questions that you missed.
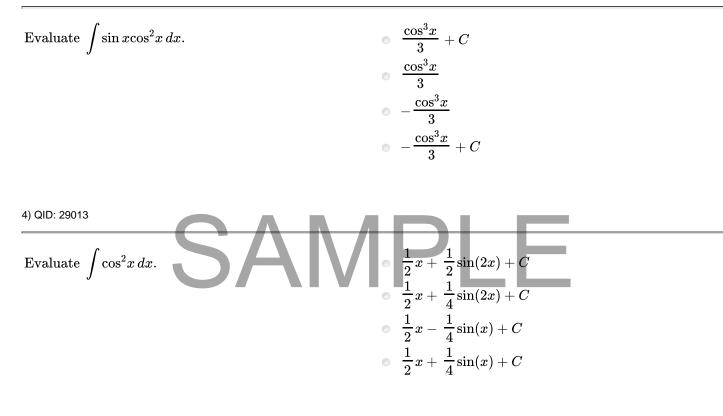
1) QID: 26850

Evaluate the integral $\displaystyle \int \frac{dx}{x^2 \sqrt{x^2 - 9}}$ using the integration table below.

Table of Integrals

$$\int \frac{x\,dx}{a + bx} = \frac{1}{b^2}\left(bx - a\ln|a + bx|\right) + C$$

$$\int \frac{dx}{x(a + bx)} = \frac{1}{a}\ln\left|\frac{x}{a + bx}\right| + C$$

For $a > 0$:

$$\int \frac{\sqrt{a^2 + x^2}}{x}\,dx = \sqrt{a^2 + x^2} - a\ln\left|\frac{a + \sqrt{a^2 + x^2}}{x}\right| + C$$

$$\int \frac{dx}{x\sqrt{a^2 + x^2}} = -\frac{1}{a}\ln\left|\frac{a + \sqrt{a^2 + x^2}}{x}\right| + C$$

$$\int \frac{dx}{x^2\sqrt{a^2 + x^2}} = -\frac{\sqrt{a^2 + x^2}}{a^2 x} + C$$

$$\int \frac{dx}{x^2\sqrt{x^2 - a^2}} = \frac{\sqrt{x^2 - a^2}}{a^2 x} + C$$

$$\int \frac{x^2\,dx}{\sqrt{a^2 - x^2}} = -\frac{x}{2}\sqrt{a^2 - x^2} + \frac{a^2}{2}\arcsin\frac{x}{a} + C$$

$$\int \frac{x^2\,dx}{\sqrt{x^2 - a^2}} = \frac{x}{2}\sqrt{x^2 - a^2} + \frac{a^2}{2}\ln\left|x + \sqrt{x^2 - a^2}\right| + C$$

○ $\displaystyle \frac{\sqrt{x^2 - 9}}{9x} + C$

○ $\displaystyle -\frac{1}{9x}\sqrt{9^2 - x^2} + C$

○ $\displaystyle -\frac{x}{2}\sqrt{9 - x^2} + \frac{9}{2}\arcsin\frac{x}{3} + C$

○ $\displaystyle \frac{x}{2}\sqrt{x^2 - 9} + \frac{9}{2}\ln\left|x + \sqrt{x^2 - 9}\right| + C$

Evaluate the integral

$$\int_0^{(\ln 2)^2} \frac{e^{\sqrt{x}}}{\sqrt{x}}\, dx$$

using the substitution
$u = \sqrt{x}$.

○ $\dfrac{2}{\ln 2}$

○ 2

○ 4ln 2

○ The integral cannot be evaluated.

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3) QID: 29016

Evaluate $\displaystyle\int \sin x\cos^2 x\, dx$.

○ $\dfrac{\cos^3 x}{3} + C$

○ $\dfrac{\cos^3 x}{3}$

○ $-\dfrac{\cos^3 x}{3}$

○ $-\dfrac{\cos^3 x}{3} + C$

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4) QID: 29013

Evaluate $\displaystyle\int \cos^2 x\, dx$.

○ $\dfrac{1}{2}x + \dfrac{1}{2}\sin(2x) + C$

○ $\dfrac{1}{2}x + \dfrac{1}{4}\sin(2x) + C$

○ $\dfrac{1}{2}x - \dfrac{1}{4}\sin(x) + C$

○ $\dfrac{1}{2}x + \dfrac{1}{4}\sin(x) + C$

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5) QID: 29292

Evaluate $\displaystyle\int \tan^3 x\, dx$.

○ $\tan x - \ln|\sec x| + C$

○ $\dfrac{\tan^2 x}{2} - \ln|\sec x| + C$

○ $\dfrac{\tan^2 x}{2} + \sec^2 x + C$

○ $\tan x + \sec^2 x + C$

6) QID: 29295

Evaluate $\int \tan^5 x \sec^7 x \, dx$.

- $\dfrac{\sec^{11}x}{11} + \dfrac{2\sec^9 x}{9} + \dfrac{\sec^7 x}{7} + C$

- $\dfrac{\sec^{11}x}{11} - \dfrac{2\sec^9 x}{9} + \dfrac{\sec^7 x}{7} + C$

- $\dfrac{\sec^{10}x}{10} - \dfrac{\sec^8 x}{8} + \dfrac{\sec^6 x}{6} + C$

- $\dfrac{\sec^{10}x}{10} + \dfrac{\sec^8 x}{8} + \dfrac{\sec^6 x}{6} + C$

7) QID: 29448

Evaluate $\int \dfrac{dx}{x\left(x-7\right)}$.

- $\dfrac{1}{7x^2} + \dfrac{1}{7(x-7)^2} + C$

- $\dfrac{1}{7}\ln|x| + \dfrac{1}{7}\ln|x-7| + C$

- $-\dfrac{1}{7x^2} + \dfrac{1}{7(x-7)^2} + C$

- $-\dfrac{1}{7}\ln|x| + \dfrac{1}{7}\ln|x-7| + C$

8) QID: 29451

Evaluate $\int \dfrac{12x+24}{x^2+4x+3}\,dx$.

- $6\ln|x+3| + 6\ln|x+1|$

- $-3\ln|x+3| - \ln|x+1| + C$

- $6\ln|x+3| + 6\ln|x+1| + C$

- $-3\ln|x+3| - \ln|x+1|$

9) QID: 29445

Evaluate $\int \dfrac{5x^3+15x+19x^2+14}{x^4+5x^2+4x^3+4x+4}\,dx$.

- $3\ln(x+2) - \dfrac{4}{x+2} + \ln|x^2+1|$
  $+ \arctan x + C$

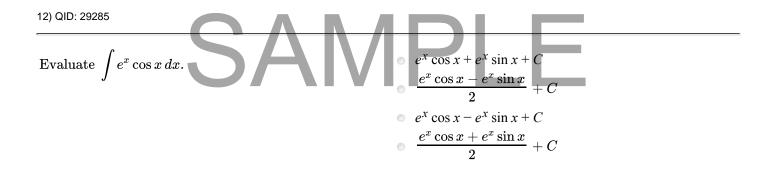- $3\ln|x+2| - \dfrac{4}{x+2} + \ln|x^2+1|$
  $+ \arctan x + C$

- $3\ln|x+2| - \dfrac{4}{x+2} + \ln|x^2+1| + tanx + C$

- $3\ln|x+2| - \dfrac{4}{x+2} + \ln\left(x^2+1\right) + tanx + C$

Evaluate $\displaystyle\int \frac{3e^x + 7}{e^{2x} + 4e^x + 4} e^x \, dx.$

- $3\ln|e^x + 2| - \dfrac{1}{e^x + 2} + C$
- $3\ln|u + 2| - \dfrac{1}{u + 2} + C$
- $3\ln|e^x + 2| + \dfrac{1}{e^x + 2} + C$
- $3\ln|u + 2| + \dfrac{1}{u + 2} + C$

Evaluate the integral $\displaystyle\int x^2 \cos(3x) \, dx.$

- $\dfrac{1}{3}x^2\sin(3x) + \dfrac{2}{27}\sin(3x) - \dfrac{2}{9}x\cos(3x) + C$
- $\dfrac{1}{3}x^2\sin(3x) - \dfrac{2}{27}\sin(3x) + \dfrac{2}{9}x\cos(3x) + C$
- $x^2\sin(x) - \dfrac{2}{9}\sin(x) + \dfrac{2}{3}x\cos(x) + C$
- $x^2\sin(x) + \dfrac{2}{9}\sin(x) - \dfrac{2}{3}x\cos(x) + C$

Evaluate $\displaystyle\int e^x \cos x \, dx.$

- $e^x\cos x + e^x\sin x + C$
- $\dfrac{e^x\cos x - e^x\sin x}{2} + C$
- $e^x\cos x - e^x\sin x + C$
- $\dfrac{e^x\cos x + e^x\sin x}{2} + C$

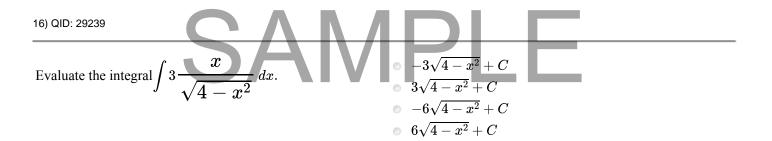Evaluate $\displaystyle\int 2e^x \sin x \, dx.$

- $\dfrac{e^x\sin x - e^x\cos x}{2}$
- $\dfrac{e^x\sin x + e^x\cos x}{2} + C$
- $e^x\sin x - e^x\cos x + C$
- $e^x\sin x + e^x\cos x$

Evaluate $\int \ln(x)x^2\,dx$.

- ○ $\dfrac{1}{3}\ln(x)x^3 - \dfrac{1}{9}x^3 + C$
- ○ $\dfrac{1}{3}\ln(x)x^3 + \dfrac{1}{9}x^3 + C$
- ○ $\dfrac{1}{3}\ln(x)x^3 + \dfrac{1}{3}x^3 + C$
- ○ $\dfrac{1}{3}\ln(x)x^3 - \dfrac{1}{3}x^3 + C$

15) QID: 29227

Evaluate the integral $\int 4\,\dfrac{1}{\left(4-x^2\right)^{3/2}}\,dx$.

- ○ $-\dfrac{x}{\sqrt{4-x^2}} + C$
- ○ $\dfrac{x}{\sqrt{4-x^2}} + C$
- ○ $\dfrac{1}{\sqrt{4-x^2}} + C$
- ○ $-\dfrac{1}{\sqrt{4-x^2}} + C$

16) QID: 29239

Evaluate the integral $\int 3\,\dfrac{x}{\sqrt{4-x^2}}\,dx$.

- ○ $-3\sqrt{4-x^2} + C$
- ○ $3\sqrt{4-x^2} + C$
- ○ $-6\sqrt{4-x^2} + C$
- ○ $6\sqrt{4-x^2} + C$

17) QID: 29259

Evaluate $\displaystyle\int_{-2}^{3} \dfrac{x}{\left(4+x^2\right)^{3/2}}\,dx$.

- ○ $\dfrac{1}{13}\sqrt{13} + \dfrac{1}{4}\sqrt{2}$
- ○ $-\dfrac{1}{13}\sqrt{13} - \dfrac{1}{4}\sqrt{2}$
- ○ $\dfrac{1}{13}\sqrt{13} - \dfrac{1}{4}\sqrt{2}$
- ○ $-\dfrac{1}{13}\sqrt{13} + \dfrac{1}{4}\sqrt{2}$

18) QID: 26146

Approximate the integral $\int_1^4 \dfrac{3}{x}\,dx$ using the trapezoidal rule with $N = 4$.

- 5.435
- 2.845
- 8.569
- 4.284

19) QID: 26168

Approximate the integral $\int_1^7 \dfrac{1}{5x}\,dx$ using the trapezoidal rule with $N = 3$.

- 0.442
- 0.332
- 0.884
- 0.554

20) QID: 29257

Evaluate $\int_7^{13} 2\,\dfrac{1}{x^2\sqrt{x^2-9}}\,dx$.

- $\dfrac{2}{9}\cos\theta$
- $\dfrac{2}{9}\cdot\dfrac{\sqrt{x^2-9}}{x}$
- $\dfrac{4}{819}\sqrt{10}$
- $-\dfrac{2}{9}\cdot\dfrac{\sqrt{x^2-9}}{x}$