

SELECT THE BEST RESPONSE AND RECORD IT ON YOUR SCAN TRON ANSWER SHEET.

1. Evaluate the definite integral: $\int_0^2 \frac{1}{\sqrt{16-x^2}} dx.$

- a. 1
 b. -1
 c. None of these
 d. $2 - \sqrt{3}$
 e. $\sqrt{3} - 2$

2. Evaluate: $\int \ln 2x dx.$

- a. $x(\ln 2x - 1) + C$
 b. None of these
 c. $2x(2 \ln 2x - 1) + C$
 d. $\frac{1}{x} + C$
 e. $\frac{1}{2} \left[1 - \frac{1}{x} \right] + C$

3. Find the indefinite integral using integration by parts: $\int x^2 e^x dx.$

- a. $\frac{x^3 e^x}{3} + C$
 b. $e^x(x^2 - 2x + 2) + C$
 c. $x e^x(x + 2) + C$
 d. $\frac{x^3 e}{3(x + 1)} + C$
 e. None of these

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4.

Evaluate the integral: $\int \sin^2 x \cos^3 x \, dx$.

- a. $\frac{1}{4} \cos^4 x - \frac{1}{6} \cos^6 x + C$
- b. $\frac{1}{3} \sin^3 x - \frac{1}{5} \sin^5 x + C$
- c. None of these
- d. $\frac{1}{2} \cos^2 x \left[\frac{1}{3} \sin^3 x - \frac{1}{5} \sin^5 x \right] + C$
- e. $\frac{1}{12} \sin^3 x \cos^4 x + C$

5.

Evaluate the integral: $\int 30 \tan^6 x \, dx$.

- a. $6 \tan^5 x - 10 \tan^3 x + 30 \tan x - 30x + C$
- b. $6 \tan^5 x - 10 \tan^3 x + 30 \sec x + C$
- c. $6 \tan^5 x + C$
- d. None of these
- e. $6 \tan^5 x - 10 \tan^3 x + 30 \tan x + C$

6.

Evaluate the integral: $\int \frac{dx}{(81 - x^2)^{3/2}}$.

- a. $\frac{x}{\sqrt{81 - x^2}} + C$
- b. None of these
- c. $\frac{-2}{\sqrt{81 - x^2}} + C$
- d. $\frac{\sqrt{81 - x^2}}{2} + C$
- e. $\frac{9\sqrt{81 - x^2}}{x} + C$
- $\frac{x}{\sqrt{81 - x^2}} + C$

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7. Evaluate the integral: $\int \frac{2}{(x+2)^2(2-x)} dx.$

a. None of these

b. $-\frac{1}{8} \ln \left| \frac{x+2}{2-x} \right| - \frac{1}{2(x+2)} + C$

c. $-\frac{2}{(x+2)} + \ln|2-x| + C$

d. $-\frac{1}{2(x+2)} - \frac{1}{8} \ln|2-x| + C$

e. $\frac{1}{8} \ln|x+2| + \frac{1}{2} \ln(x+2)^2 - \frac{1}{8} \ln|2-x| + C$

8. Use integration tables to evaluate the indefinite integral:

$$\int \frac{x}{1 + e^{7x}} dx.$$

a. $\frac{x^2}{2} - \frac{1}{14} \ln[1 + e^{7x}] + C$

b. $x^2 - \ln[1 + e^x] + C$

c. $x^2 - \frac{1}{7} \ln[1 + e^{7x}] + C$

d. None of these

e. $7x^2 - \ln[1 + e^{7x}] + C$

9. Evaluate $\lim_{x \rightarrow \infty} \frac{x^2}{\ln x}.$

a. None of these

b. Does not exist

c. 1

d. ∞

e. 0

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10.

Evaluate the integral or determine that it diverges: $\int_2^{\infty} \frac{1}{(x-1)^2} dx$.

- a. Converges to 1
- b. Converges to 0
- c. Diverges
- d. None of these
- e. Converges to -1