

## LESSON PRACTICE

## 23A

Evaluate the following integrals. Check your answers by differentiation.

1.  $\int (2 + x)^4 dx$

2.  $\int \frac{dt}{\sqrt{t+1}}$

3.  $\int (3 + x^2)^{10} 2x dx$

4.  $\int \csc^2(4x) \cdot 4 dx$

5.  $\int \sin^3(3\theta) (\cos(3\theta)) d\theta$

6.  $\int \frac{dY}{(a - Y)^2}$  where a is a constant

7.  $\int e^{4X} dX$

8.  $\int e^X (1+e^X)^8 dX$

9.  $\int \frac{(\ln(X))^2}{X} dX$

10.  $\int \frac{3dt}{\sqrt{2t+1}}$

## LESSON PRACTICE

## 23B

Evaluate the following integrals. Check your answers by differentiation.

1.  $\int (x - 3)^{21} dx$

2.  $\int x \sqrt{2x^2 + 1} dx$

3.  $\int \frac{x^2}{\sqrt{1 - x^3}} dx$

4.  $\int (1 + x^3)^3 3x^2 dx$

5.  $\int \cos(2x - 3) dx$

$$6. \int \frac{\cos(\sqrt{\theta})d\theta}{\sqrt{\theta}}$$

$$7. \int \sqrt{\tan\theta} \sec^2(\theta)d\theta$$

$$8. \int e^{2X} (2 - e^{2X})dX$$

$$9. \int \frac{dX}{1-X}$$

$$10. \int \frac{(X+1)dX}{\sqrt[3]{X^2+2X-1}}$$

## LESSON PRACTICE

# 23C

Evaluate the following integrals. Check your answer by differentiation.

1.  $\int \frac{dt}{\sqrt{t+4}}$

2.  $\int (2 - 3Y)^5 dY$

3.  $\int \frac{(x^2+1)^2}{x^2} dx$

$$4. \int \frac{\sec^2(\theta)d\theta}{(1+\tan(\theta))^4}$$

$$5. \int \frac{\sqrt{1+\ln(x)}}{x} dx$$

## LESSON PRACTICE

# 23D

Evaluate the following integrals. Check your answer by differentiation.

1.  $\int \cot(3\theta) \csc^2(3\theta) d\theta$

2.  $\int (x^2 + 1)(x^2 - 2)dx$

3.  $\int \frac{4dY}{(2Y+1)^3}$

$$4. \int \frac{\sec^2(\theta)d\theta}{\sqrt{\tan(\theta) - 2}}$$

$$5. \int xe^{-2x^2} dx$$

## TEST

1.  $\int \sec X \tan X \, dX =$
- A.  $\sec X + C$
  - B.  $\tan X + C$
  - C.  $\frac{\sec^2 X}{2} + C$
  - D.  $\sec^2 X \tan X + C$

2.  $\int e^{-2X} \, dX =$
- A.  $e^{-2X} + C$
  - B.  $-2e^{-2X} + C$
  - C.  $-\frac{1}{2}e^{-2X} + C$
  - D.  $\frac{1}{2}e^{-2X} + C$

3.  $\int (X^2 - 2X) \, dX$
- A.  $\frac{1}{3}X^3 + X^2 + C$
  - B.  $\frac{1}{3}X^3 + 2X + C$
  - C.  $2X - 2 + C$
  - D.  $\frac{1}{3}X^3 - X^2 + C$

4.  $\int \frac{dY}{(3-Y)^3}$   
A.  $-(3-Y)^{-4} + C$

B.  $-\frac{1}{2}(3-Y)^{-2} + C$

C.  $\frac{1}{2}(3-Y)^{-2} + C$

D.  $(3-Y)^2 + C$

5.  $\int X(5-3X^2)^5 dX$

A.  $-\frac{1}{36}(5-3X^2)^6 + C$

B.  $-\frac{1}{6}(5-3X^2)^6 + C$

C.  $-\frac{5}{6}(5-3X^2)^4 + C$

D.  $\frac{1}{36}(5-3X^2)^6 + C$

6.  $\int \frac{(2-\ln X)^3}{X} dX$

A.  $\frac{1}{4}(2-\ln X)^4 + C$

B.  $-\frac{1}{4}(2-\ln X)^4 + C$

C.  $-(2-\ln X)^4 + C$

D.  $(2-\ln X)^4 + C$

TEST

7.  $\int (1 + e^x)^2 dx$

A.  $2(1 + e^x) + C$

B.  $e^x + C$

C.  $\frac{1}{3}(1 + e^x)^3 + C$

D.  $x + 2e^x + \frac{1}{2}e^{2x} + C$

8.  $\int \frac{\csc^2 2\theta d\theta}{\sqrt{(1 + \cot 2\theta)}}$

A.  $-\frac{1}{4} \sqrt{(1 + \cot 2\theta)} + C$

B.  $\frac{1}{4} \sqrt{(1 + \cot 2\theta)} + C$

C.  $-\frac{3}{4}(1 + \cot 2\theta) - \frac{3}{2} + C$

D.  $-\sqrt{(1 + \cot 2\theta)} + C$

9.  $\int \frac{(x^2 - 5)dx}{x^3 - 15x + 3}$

A.  $\frac{1}{3} \ln(x^3 - 15x + 3) + C$

B.  $-\frac{1}{6}(x^3 - 15x + 3)^{-2} + C$

C.  $\ln(x^3 - 15x + 3) + C$

D.  $\ln(x^2 - 5) + C$

10. 
$$\int \frac{\sin 2\theta d\theta}{(1 - 2\cos 2\theta)^3}$$

A.  $-\frac{1}{2} (1 - 2\cos 2\theta)^{-2} + C$

B.  $-\frac{1}{8} (1 - 2\cos 2\theta)^{-2} + C$

C.  $-\frac{1}{8} (1 - 2\cos 2\theta)^4 + C$

D.  $-\frac{1}{4} (1 - 2\cos 2\theta)^4 + C$