

I. Multiple Choice

_____ 1. $\int dw =$

- A. $0 + K$
- B. $x + C$
- C. $w + K$
- D. 1
- E. $\frac{w^2}{2} + K$

_____ 2. $\int (\sin x + \sqrt{x}) dx =$

- A. $-\cos x + \frac{3}{2}x^{\frac{3}{2}} + C$
- B. $-\cos x + \frac{2}{3}x^{\frac{3}{2}} + C$
- C. $\cos x + \frac{1}{2}x^{\frac{-1}{2}} + C$
- D. $-\cos x + \frac{1}{2}x^{\frac{-1}{2}} + C$
- E. None of these

_____ 3. $\int x^7 dx =$

- A. $\frac{1}{7}x^7 + C$
- B. $-\frac{1}{7}x^7 + C$
- C. $\frac{1}{8}x^8 + C$
- D. $7x^6 + C$
- E. $\frac{1}{7}x^8 + C$

_____ 4. $\int 12 dv =$

- A. $6v^2 + K$
- B. $12x + K$
- C. $12v^2 + K$
- D. $12v + K$
- E. $\frac{1}{12}v^{12} + K$

_____ 5. $\int \frac{dx}{x^3} =$

A. $\frac{x^4}{4} + C$

B. $\frac{-1}{4x^4} + C$

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

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

E. $\ln|x^3| + C$

_____ 6. $\int (3s+4)^2 ds =$

A. $\frac{(3s+4)^2}{3} + C$

B. $\frac{(3s+4)^3}{9} + C$

C. $\frac{(3s+4)^3}{3} + C$

D. $(3s+4)^3 + C$

E. $\frac{3s^2}{4} + 4s + C$

_____ 7. $\int \cos^2 x \sin x dx =$

A. $-\frac{\cos^3 x}{3} + K$

B. $\frac{\cos^3 x}{3} + K$

C. $\frac{\cos^3 x \sin^2 x}{6} + K$

D. $-\frac{\cos^3 x \sin^2 x}{6} + K$

E. $-\frac{\sin^2 x}{2} + K$

_____ 8. $\int \cos 5x \, dx =$

- A. $\frac{1}{5} \sin(5x) + C$
- B. $-\frac{1}{5} \sin(5x) + C$
- C. $-\sin(5x) + C$
- D. $\sin(5x) + C$
- E. $\cos(5x) + C$

_____ 9. $\int 2 \sin x \cos x \, dx =$

- A. $\sin^2 x + C$
- B. $-\cos^2 x + C$
- C. $\frac{-\cos 2x}{2} + C$
- D. All of these
- E. None of these

_____ 10. A particle's acceleration along a straight line is given by the formula $a = 3 - 4t$ for any time t . Which of these gives the correct function for the velocity at any time t ?

- A. $v(t) = 3t + 2t^2 + C$
- B. $v(t) = -4$
- C. $v(t) = -4 + C$
- D. $v(t) = 3t - 4t^2 + C$
- E. $v(t) = 3t - 2t^2 + C$

II. Free Response

SHOW ALL WORK on your own paper

11. Evaluate $\int \csc(x) \cot(x) dx$

12. Evaluate $\int h(x) d(h(x))$

13. Evaluate $\int \frac{3x dx}{4x^2 + 1}$

14. Evaluate $\int (6t^5 - 3t^3 + 8) dt$

15. Evaluate $\int e^{6w+4} dw$

16. Evaluate $\int \sec^2(7y) dy$

17. Evaluate $\int \cos x \sqrt{\sin x} dx$

18. Evaluate $\int \left(\frac{x^2 - 4}{x - 2} \right) dx$

19. Evaluate $\int \sin(x) \sin(\cos(x)) dx$

20. Evaluate $\int \frac{\ln(x)}{x} dx$

Extra Credit: Evaluate $\int \sec^8(4x) \tan(4x) dx$