Test 6-2- 6-3 A.P. Calculus Name_____

I. Multiple Choice

_____ 1. $\int dr =$

A. $0 + K$

B. $x + C$

C. 1

D. $r + K$

E. $\frac{r^2}{2} + K$

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

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

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

C. $-\cos x + \frac{3}{2} x^{\frac{3}{2}} + C$

D. $-\cos x + \frac{2}{3} x^{\frac{3}{2}} + C$

E. None of these

_____ 3. $\int x^6 dx =$

A. $\frac{1}{7} x^7 + C$

B. $-\frac{1}{7} x^7 + C$

C. $\frac{1}{6} x^6 + C$

D. $6x^5 + C$

E. $\frac{1}{6} x^7 + C$

_____ 4. $\int 12\, dv =$

A. $6v^2 + K$

B. $12x + K$

C. $\frac{1}{6} v^6 + K$

D. $12v^2 + K$

E. $12v + K$

_____ 5. $\int \frac{dx}{x^2} =$

A. $\frac{x^3}{3} + C$

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

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

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

E. $\frac{1}{x^3} + C$

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

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

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

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

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

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

_____ 7. $\int e^{3x-1} dx =$

A. $\ln|3x-1| + K$

B. $\frac{1}{3}\ln|3x-1| + K$

C. $e^{3x-1} + K$

D. $\frac{1}{3}e^{3x-1} + K$

E. None of these

_____ 8. $\int \sin 2x\,dx =$

A. $\frac{1}{2}\cos 2x + C$

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

C. $-\cos 2x + C$

D. $\cos 2x + C$

E. $\sin 2x + K$

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

A. $\sin^2 x + C$

B. $-\cos^2 x + C$

C. $\dfrac{-\cos 2x}{2} + C$

D. All of these

E. None of these

_____ 10. A particle's acceleration along a straight line is given by the formula $a = 3 + 2t$ for any time t. Which of these gives the correct function for the velocity at any time t?

A. $v(t) = 3t + t^2 + C$

B. $v(t) = 3$

C. $v(t) = 3 + C$

D. $v(t) = 3 + t^2 + C$

E. $v(t) = t^2 + C$

II. Free Response SHOW ALL WORK on your own paper

11. Evaluate $\int \sec(x)\tan(x)\,dx$

12. Evaluate $\int \left(g(x)\right)^3 g'(x)\,dx$

13. Evaluate $\int \dfrac{x\,dx}{5x^2+4}$

14. Evaluate $\int \left(6t^3-4t^2+8\right)dt$

15. Evaluate $\int x e^{x^2}\,dx$

16. Evaluate $\int \csc^2(3v)\,dv$

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

18. Evaluate $\int \left(x^2-3\right)^2\,dx$

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

20. Evaluate $\int \dfrac{x-2}{\left(x^2-4x+7\right)^6}\,dx$

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