Test Sections 8.1 – 8.3 A.P. Calculus Mr. Pleacher Name _____

I. Multiple Choice

_____ 1. $\int \frac{dx}{\sqrt{100\text{-}x^2}} =$

A) $\ln\left|100 - x^2\right| + C$

B) $\frac{1}{10}\left(100 - x^2\right)^{-1} + C$

C) $\frac{1}{10} Tan^{-1}(x) + C$

D) $Sin^{-1}\left(\frac{x}{10}\right) + C$

E) None of the above

_____ 2. $\int \frac{e^{3x}\,dx}{1 + e^{6x}} =$

A) $\ln\left|1 + e^{6x}\right| + C$

B) $2\ln\left|1 + e^{6x}\right| + C$

C) $\frac{1}{6} Tan^{-1}\left(e^{6x}\right) + C$

D) $\frac{1}{3} Tan^{-1}\left(e^{3x}\right) + C$

E) None of these

_____ 3. $\int \sec^3(2x)\,\tan(2x)\,dx =$

(A) $\frac{1}{8}\sec^4(2x) + C$

(B) $\frac{1}{4}\sec^4(2x) + C$

(C) $\frac{1}{3}\sec^3(2x) + C$

(D) $\frac{1}{6}\sec^3(2x) + C$

(E) $\frac{1}{2}\tan^2(2x) + C$

_____ 4. $\int \frac{x^3\,dx}{1+x^4} =$

A) $\ln\left|1+x^4\right|+C$

B) $\frac{1}{4}\left(1+x^4\right)^{-1}+C$

C) $\frac{1}{2}Tan^{-1}\left(x^2\right)+C$

D) $\frac{1}{4}\ln\left|x^4+1\right|+C$

E) None of the above

_____ 5. $\int \ln(x)\,dx =$

A) ½ $\left(\ln|x|\right)^2 + C$

B) $x\ln x+\int dx$

C) $x\ln x-\int dx$

D) $\ln x-\int dx$

E) $\ln x+\int dx$

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

A) $\frac{\sin^4 x}{4}+C$

B) $-\cos^3 x+C$

C) $-\cos x+\frac{1}{3}\cos^3 x+C$

D) $-\cos(x)-\frac{1}{3}\cos^3 x+C$

E) $\cos(x)+\frac{1}{3}\cos^3 x+C$

II. Free Response

Determine the value of the following integrals:

7. $\int x \sec^2 x \, dx =$

8. $\int x^2 e^{2x} \, dx =$

9. $\int \sin^2(2x)\, dx =$

10. $\int \frac{x^3 - 5x^2 + x + 8}{x^2 + 1} \, dx =$

11. $\int \frac{dx}{1 + 4x^2} =$

12. $\int e^x \sin x \, dx =$

13. $\int \csc(3x)\, dx =$

14. $\int \sec^4(x) \tan^2(x)\, dx =$

15. $\int \sqrt{\cos x} \sin x \, dx =$

16. $\int x \tan^2(x^2) \sec^2(x^2) dx =$

17. $\int \cot(3x^2)\, x \, dx =$

18. $\int \sqrt{4 + 2x}\, dx =$

19. $\int (5 - 2x^2)^2 \, dx =$

20. $\int \frac{e^{\tan^{-1} x}}{1 + x^2} dx =$