Name: _____ AP Calculus AB, Substitution Practice Worksheet

1. $\int x(x^2+3)^5 dx = \frac{(x^2+3)^6}{12} + C$

2. $\int (\sin x)\cos^3(x) dx = -\frac{\cos^4 x}{4} + C$

3. $\int (\sec(5x)\tan(5x) dx = \frac{1}{5}\sec(5x) + C$

4. $\int \frac{(2x-1)dx}{x^2-x+5} = = \ln\left|x^2-x+5\right| + C$

5. $\int \frac{x^2 dx}{(x^3-4)^2} = \frac{1}{3}\left(\frac{u^{-1}}{-1}\right) + C = \frac{-1}{3(x^3-4)} + C$

6. $\int \frac{dx}{4+16x^2} = \frac{1}{8}\tan^{-1}(2x) + C$

7. $\int (4x-3)^9 dx = \frac{(4x-3)^{10}}{40} + C$

8. $\int \cos x\sqrt{\sin x} dx = \frac{2(\sin x)^{\frac{3}{2}}}{3} + C$

9. $\int 4(6x-1)^4 dx = \frac{(6x-1)^5}{15} + C$

10. $\int (6x^2-1)(2x^3-x)^3 dx = \frac{(2x^3-x)^4}{4} + C$

11. $\int \frac{x^3}{(5x^4+2)^3} dx = \frac{-1}{40(5x^4+2)^2} + C$

12. $\int \cos^5(3x)\sin(3x) dx = \frac{-\cos^6(3x)}{18} + C$

13. $\int 2xe^{3x^2} dx = \frac{e^{3x^2}}{3} + C$

14. $\int \frac{xdx}{\sqrt{2x^2+5}} = \frac{\sqrt{2x^2+5}}{2} + C$

15. $\int \tan^6(x)\sec^2(x) dx = \frac{\tan^7 x}{7} + C$

16. $\int \sec^6(x)\tan(x) dx = \frac{\sec^6 x}{6} + C$

17. $\int (2x^3-1)(x^4-2x)^5 dx = \frac{(x^4-2x)^6}{12} + C$

18. $\int \frac{2xdx}{4x^2-3} = \frac{\ln\left|4x^2-3\right|}{4} + C$

19. $\int \frac{dx}{\sqrt{1-9x^2}} = \frac{\sin^{-1}(3x)}{3} + C$

20. $\int \frac{2\cos x}{\sin x} dx = 2\ln\left|\sin x\right| + C$

21. $\int \frac{\sqrt{\ln x}}{x} dx = \frac{2(\ln x)^{\frac{3}{2}}}{3} + C$