AP Calculus   Name_____
Integration by U-Substitution   Integration Day 9
Evaluate the indefinite integral.

1. $\int x \sin(x^2) dx$

2. $\int x^2 e^{x^3} dx$

3. $\int (1-2x)^9 dx$

4. $\int (3t+2)^{2.4} dt$

5. $\int (x+1)\sqrt{2x+x^2} \, dx$

6. $\int \sec^2 2\theta \, d\theta$

7. $\int \sin \pi t \, dt$

8. $\int e^x \cos(e^x) dx$

9. $\int \cos^4\theta \sin\theta \ d\theta$

10. $\int \sec^2\theta \tan^3\theta \ d\theta$

11. $\int \sqrt{x} \sin\left(1 + x^{\frac{3}{2}}\right) dx$

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

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

14. $\int e^{\cos t} \sin t \ dt$

15. $\int 5^t \sin(5^t) dt$

16. $\int x^2 \sqrt{x^3 + 1} \ dx$

Answers:

1) $-\dfrac{1}{2}\cos(x^2)+C$

2) $\dfrac{1}{3}e^{x^3}+C$

3) $-\dfrac{1}{20}(1-2x)^{10}+C$

4) $\dfrac{5}{51}(3t+2)^{3.4}+C$

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

6) $\dfrac{1}{2}\tan(2\theta)+C$

7) $-\dfrac{1}{\pi}\cos(\pi t)+C$

8) $\sin(e^x)+C$

9) $-\dfrac{1}{5}\cos^5(\theta)+C$

10) $\dfrac{1}{4}\tan^4(\theta)+C$

11) $-\dfrac{2}{3}\cos\left(1+x^{\frac{3}{2}}\right)+C$

12) $\dfrac{2}{3}(1+e^x)^{\frac{3}{2}}+C$

13) $\dfrac{1}{15}(x^3+3x)^5+C$

14) $-e^{\cos t}+C$

15) $-\dfrac{1}{\ln 5}\cos(5^t)+C$

16) $\dfrac{2}{9}(x^3+1)^{\frac{3}{2}}+C$