AP Calculus BC **Name: _____**

7.1 Worksheet **Period: _____**

Evaluate the definite/indefinite integral.

1. $\int (5x-3)^4 dx$

2. $\int_0^2 (5x^2+7x-4)\ dx$

3. $\int \frac{2t+1}{t^2+t-4} dx$

4. $\int_0^{3\pi/2} \sin(x)\ dx$

5. $\int t \cdot sin(t^2)\, dt$

6. $\int 2t\sqrt{t^2+7}\, dt$

7. $\int \frac{7}{(z-1\ )^7}\, dz$

8. $\int [2x + \sin(x)]\, dx$

9. $\int \left[v + \frac{1}{(3v-1)^3}\right] dv$

10. $\int (3e^x + 2x^3)\, dx$

11. $\int \frac{t^2-3}{-t^3+9t+1}\, dt$

12. $\int \frac{sinx}{\sqrt{cosx}}\, dx$

13. $\int \frac{2}{e^{-x}+1}\, dx$

14. $\int -\frac{1}{\sqrt{1-(4t+1)^2}}\, dt$

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

16. $\int \frac{1}{4+9x^2}\, dx$

7.2 Worksheet Part 1

Identify u and dv for the following integrals. DO NOT EVALUATE.

1. $\int xe^x\,dx$

u =

dv =

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

u =

dv =

3. $\int \ln(5x)\,dx$

u =

dv =

4. $\int e^x \sin(x)\;dx$

u =

dv =

Use Integration by Parts to evaluate the integral. The u and dv are given.

5. $\int 2xe^x\,dx$

u = 2x

dv = e^x

6. $\int x^2 \sin(2x)\;dx$ (twice!)

u = x^2

dv = sin(2x)

7. $\int x^3 Ln(x)\, dx$

u = Ln(x)

dv = x^3

8. $\int 3x^2 Ln(x)\ dx$

u = Ln(x)

dv = $3x^2$

Use the simplest method to evaluate the integral. Some will NOT require Integration by Parts.

9. $\int 2x\ dx$

10. $\int \mathrm{x} \cdot \sin(x^2)\, dx$

11. $\int x \cdot e^{4x}\ dx$

12. $\int t \cdot Ln(t+1)\, dt$

13. $\int \frac{[Ln(x)]^2}{x}\ dx$

14. $\int \frac{x}{\sqrt{x^2+3}}\ dx$

15. $\int x^3 \cdot \sin(x)\ dx$

16. $\int 4x^2 \cos(x)\ dx$

17. $\int e^{-3x} \sin(5x)\ dx$

18. $\int e^{4x} \cos(2x)\ dx$

Evaluate the definite integral.

19. $\int_0^2 x \cdot e^{\frac{x}{2}}\, dx$

20. $\int_0^{\pi/4} x \cdot \cos(2x)\, dx$

21. $\int_2^4 x \cdot \operatorname{arcsec}(x)\ dx$

22. $\int_3^4 xLn(x)\ dx$

7.2 Worksheet Part 2

Use the tabular method to evaluate the integral.

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

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

3. $\int x^3 \sin(x)\ dx$

4. $\int x^3 \cos(x)\ dx$

5 – 8 Use Substitution, then Integration by Parts to evaluate the integral.

5. $\int \sin(\sqrt{x})\ dx$

6. $\int 2x^3 \cos(x^2)\, dx$

7. $\int x^5 e^{x^2}\, dx$

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

Use the different methods to evaluate the integral. You should get the same answer!

9. $\int \frac{x^3}{\sqrt{4+x^2}}\, dx$

Use Int by Parts with dv = $\frac{x}{\sqrt{4+x^2}}$

Use Substitution with u = $4 + x^2$

Quiz Review

Evaluate the integral using the simplest method.

1. $\int (3x^4 + 7x^2 + x - 8)dx$

2. $\int 2\sin(x)\,dx$

3. $\int (5x + \cos(x))dx$

4. $\int \left(e^{2x} - 3\sec(x)\,tan(x)\right)dx$

5. $\int \left(\frac{\ln(x)}{x}\right)dx$

6. $\int \frac{x}{\sqrt{x^2+15}}dx$

7. $\int x \sin(x)\, dx$

8. $\int \tan(x)\, dx$

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

10. $\int \ln(x)\, dx$

11. $\int x^2 e^x \, dx$

12. $\int x^4 \cos(x) \, dx$

13. $\int e^{4x} dx$

14. $\int \frac{4}{(2x+7)^6} dx$

15. $\int \sec^2(3x)\,dx$

16. $\int x^4 \ln(x)\,dx$

17. $\int e^x \cos(x)\,dx$

18. $\int e^{2x} \sin(4x)\,dx$