AP Calculus
6.2 Worksheet

*All work must be shown in this course for full credit. Unsupported answers may receive NO credit.*

*Indefinite Integrals (Straight substitution)*

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

2. $\int \frac{e^x}{e^x+4}\,dx$

*Definite Integrals (straight substitution)*

3. $\int_1^{\sqrt{2}} x\cdot 2^{-x^2}\,dx$

4. $\int_e^{e^2} \frac{1}{x\ln x}\,dx$

5. True or False: $\int_0^{\pi/4} \tan^3(x)\sec^2(x)\,dx = \int_0^{\pi/4} u^3\,du$

*Algebraic Techniques*

6. $\int \frac{e^x+4}{e^x}\,dx$

7. $\int_0^1 \frac{3\,dx}{(x+1)\sqrt{x^2+2x}}$

8. $\int \frac{dx}{x^2-4x+4}$

9. $\int \frac{x+2\sqrt{x-1}}{2x\sqrt{x-1}}\,dx$

10. $\int \frac{dx}{\sqrt{-x^2+4x-3}}$

11. $\int \frac{x^5-35x}{x^2+6}dx$

*Inv Trig Function examples*

12. $\int \frac{dx}{2+9x^2}$

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

*More Practice … Use another sheet of paper to complete …*

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

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

16. $\int \sec^2(3x)\,e^{\tan(3x)}\,dx$

17. $\int \frac{x}{2x^2+1}\,dx$

18. $\int e^x\left(2+e^x\right)^{1/2}\,dx$

19. $\int x^2\cos\left(x^3\right)dx$

20. $\int \frac{\sec^2 x}{\sqrt{\tan x}}\,dx$

21. $\int \frac{\tan^{-1}x}{1+x^2}\,dx$

22. $\int \csc^2(3x+5)\,dx$

23. $\int \frac{x+1}{\left(x^2+2x+7\right)^3}\,dx$

24. $\int \frac{x}{x^2-4}\,dx$

25. $\int x\tan^2\left(x^2\right)dx$

26. $\int \cos(3x)\,e^{\sin(3x)}\,dx$

27. $\int \frac{1}{x\ln(3x)}\,dx$

28. $\int \frac{\sin(3x)}{1+\cos(3x)}\,dx$

29. $\int \frac{1}{x^2-2x+17}\,dx$

30. $\int \frac{1}{\sqrt{1-9x^2}}\,dx$

31. $\int x\csc\left(3x^2\right)\cot\left(3x^2\right)dx$

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

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

34. $\int (x+1)\sqrt{2-x}\,dx$

35. $\int \frac{x+2}{\sqrt{4-x^2}}\,dx$

36. $\int_0^2 \sqrt{4x+1}\,dx$

37. $\int_{-1}^{1} \frac{1}{1+x^2}\,dx$

38. $\int_0^1 \frac{1}{(2x+3)^3}\,dx$

39. $\int_2^{e+1} \frac{x}{(x-1)^2}\,dx$

40. $\int_0^{\pi} \sin\left(\frac{x}{2}\right)dx$

41. $\int_{-\pi}^{\pi} x\sin\left(x^2\right)dx$

42. $\int_{-1}^{0} \frac{2}{6x-1}\,dx$

43. $\int_1^5 \frac{(\ln x)^{1/2}}{x}\,dx$

44. $\int_0^1 xe^{-x^2}\,dx$

45. $\int_0^2 \left(2^x+x^2\right)dx$

(NOT Required) Want More Practice? … Try these from the textbook …Page 337: 1 – 6 all, 17 – 42 , 53 – 66