AP Calculus   NAME_____
5.6 and 5.7 Review Problems-- **NO CALC**

Problems 1 – 4: Find the derivative of the function.

1) $y = 3e^{-\frac{3}{t}}$

2) $y = -7\arcsin\dfrac{x}{2}$

3) $y = x^3 \arctan x$

4) $y = x\arctan 3x - \dfrac{1}{6}\ln(1+9x^2)$

5)   Use implicit differentiation to find $\dfrac{dy}{dx}$ given $y\ln x + y^2 = 0$

6) Find an equation of the tangent line to $y = arc\sec 4x$ at the point $x = \dfrac{\sqrt{2}}{4}$.

7) Evaluate: $\cos(\arctan x)$

8) Solve the equation: $\arctan(2x-5) = -1$

Problems 9 – 18: Find the integral.

9) $\displaystyle\int \frac{-3}{1+25x^2}\,dx$

10) $\displaystyle\int \frac{2}{x\sqrt{9x^2-1}}\,dx$

Find the integral.

11) $\int \dfrac{dx}{x^2 + 8x + 21}$

12) $\int \dfrac{2}{\sqrt{-x^2 + 4x}} dx$

13) $\int_0^1 \dfrac{dx}{\sqrt{4 - x^2}}$

14) $\int \dfrac{x}{\sqrt{1 - x^4}} dx$

Find the integral.

15) $\displaystyle\int_{1}^{e} \frac{x+6}{2x}\,dx$

16) $\displaystyle\int \frac{3}{2\sqrt{x}\,(1+x)}\,dx$

17) $\displaystyle\int \frac{e^{x}-e^{-x}}{e^{x}+e^{-x}}\,dx$

18) $\displaystyle\int 3^{\cos x}\sin x\,dx$