

Name: _____

key

NO CALCULATORS Each problem is 3 points

1. Find the general anti-derivative of $\frac{2}{1+x^2}$.

$$\int \frac{2}{1+x^2} dx = 2 \int \frac{1}{1+x^2} dx$$

$$= 2 \tan^{-1} x + C$$

2. Find the general anti-derivative of $5 \cos x$.

$$\int 5 \cos x dx = 5 \int \cos x dx$$

$$= 5 \sin x + C$$

3. Find the derivative of $\sec^3 x$.

$$3 \sec^2 x \cdot (\sec x)'$$

$$= 3 \sec^2 x \cdot \sec x \tan x$$

$$= 3 \sec^3 x \tan x$$

4. Find the general anti-derivative of $\sec^2 x$.

$$\tan x + C$$

5. Find the derivative of $x e^{x^2}$.

$$(x)' e^{x^2} + x (e^{x^2})' =$$

$$e^{x^2} + x (2x) e^{x^2} =$$

$$e^{x^2} + 2x^2 e^{x^2} =$$

$$(1 + 2x^2) e^{x^2}$$

6. Find the general anti-derivative of π . π is a constant.

$$\pi x + C$$

7. Find the general anti-derivative of $x^2 + \frac{1}{x}$.

$$\frac{x^3}{3} + \ln|x| + C$$

8. Find the derivative of $\tan x^3$.

$$\sec^2(x^3) \cdot (x^3)' =$$

$$3x^2 \sec^2(x^3)$$