

Directions: Evaluate and/or calculate as indicated.

Tips: See page two.

Write the following in algebraic form.

1. $\sec(\tan^{-1}(4x))$

2. $\cos(\cot^{-1}(x))$

3. $\sec[\sin^{-1}(x-1)]$

Find the following Derivatives

4. $\frac{d}{dx}[\sin^{-1}u] =$

5. $\frac{d}{dx}[\cos^{-1}u] =$

6. $\frac{d}{dx}[\tan^{-1}u] =$

7. $\frac{d}{dx}[\csc^{-1}u] =$

8. $\frac{d}{dx}[\sec^{-1}u] =$

9. $\frac{d}{dx}[\cot^{-1}u] =$

10. $\frac{d}{dx}\left[y = \cos^{-1}\left(\frac{x+1}{2}\right)\right]$

11. $\frac{d}{dx}\left[y = \frac{1}{\tan^{-1}x}\right]$

12. $\frac{d}{dx}\left[y = x^2(\sin^{-1}x)^3\right]$

13. $\frac{d}{dx}\left[y = \csc^{-1}(e^x)\right]$

Find the following Indefinite/Definite Integrals.

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

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

17. $\int \frac{dx}{x^2-4x+5}$

18. $\int \frac{4x+5}{x^2-4x+5} dx$

19. $\int_0^{\pi/2} \frac{\cos x}{1+\sin^2 x} dx$

20. $\int \frac{e^{2x}}{\sqrt{25-e^{2x}}} dx$

21. $\int \frac{x+a}{x^2+a^2} dx$

22. $\int \frac{x+a}{x^2-a^2} dx$

Pre/Post SI Session Quiz.

Write the following in algebraic form.

1. $\cos\left(\sin^{-1}\left(\frac{x-h}{r}\right)\right)$

Find the following Derivative.

2. $\frac{d}{dx}\left[y = \ln(\cos^{-1}x)^3\right]$

Find the following indefinite integrals.

3. $\int \frac{1}{\sqrt{16-6x-x^2}} dx$

$$14. \frac{d}{dx} \left[y = \sqrt{\cot^{-1} x} \right]$$

$$4. \int \frac{1}{x\sqrt{1-(\ln x)^2}} dx$$

$$1. \frac{d}{dx} [f(x)g(x)] = f(x)g'(x) + g(x)f'(x)$$

$$2. \frac{d}{dx} \left[\frac{f(x)}{g(x)} \right] = \frac{g(x)f'(x) - f(x)g'(x)}{(g(x))^2}$$

$$3. \int cf(x) dx = c \int f(x) dx$$

$$4. \int [f(x) \pm g(x)] dx = \int f(x) dx \pm \int g(x) dx$$

$$5. \int x^n dx = \frac{x^{n+1}}{n+1} + C, \text{ if } n \neq -1$$

$$6. \int x^n dx = \ln|x| + C, \text{ if } n = -1$$

$$7. \int b^x dx = \frac{b^x}{\ln b} + C, (0 < b, b \neq 1)$$

$$8. \int \sin x dx = -\cos x + C$$

$$9. \int \cos x dx = \sin x + C$$

$$10. \int \sec^2 x dx = \tan x + C$$

$$11. \int \csc^2 x dx = -\cot x + C$$

$$12. \int \sec x \tan x dx = \sec x + C$$

$$13. \int \csc x \cot x dx = -\csc x + C$$

$$14. \int \sec x dx = \ln|\sec x + \tan x| + C$$

$$15. \int \tan x dx = -\ln|\cos x| + C$$

$$16. \int \cot x dx = \ln|\sin x| + C$$

$$17. \int \csc x dx = \ln|\csc x - \cot x| + C$$