

Trig Derivatives Worksheet

1. $f(x) = \tan x \csc x$

$$f'(x) = \frac{\sin x}{\cos x} \cdot \frac{1}{\sin x}$$

$$f(x) = \sec x$$

$$f'(x) = \sec x \tan x$$

6. $f(x) = \sec^2 x \sin^2 x \cot x + \cos^2 x \sec x$

$$f(x) = \frac{1}{\cos^2 x} \cdot \frac{\sin^2 x}{1} \cdot \frac{\cos x}{\sin x} + \frac{\cos^2 x}{1} \cdot \frac{1}{\cos x}$$

$$f(x) = \tan x + \cos x$$

$$f'(x) = \sec^2 x - \sin x$$

2. $f(x) = \cot x \cos^2 x + \cot x \sin^2 x$

$$f(x) = \cot x (\cos^2 x + \sin^2 x)$$

$$f(x) = \cot x (1)$$

$$f'(x) = -\csc^2 x$$

7. $f(x) = \frac{\cos^2 x}{\sin x} + \csc x \sin^2 x$

$$f(x) = \cos^2 x \csc x + \csc x \sin^2 x$$

$$f(x) = \csc x (\cos^2 x + \sin^2 x)$$

$$f(x) = \csc x$$

$$f'(x) = -\csc x \cot x$$

3. $f(x) = \frac{\sec x}{\csc x}$

$$f(x) = \frac{\sin x}{\cos x}$$

$$f(x) = \tan x$$

$$f'(x) = \sec^2 x$$

8. $f(x) = \tan^2 x \csc^2 x \cos x$

$$f(x) = \frac{\sin^2 x}{\cos^2 x} \cdot \frac{1}{\sin^2 x} \cdot \frac{\cos x}{1}$$

$$f(x) = \sec x$$

$$f'(x) = \sec x \tan x$$

4. $f(x) = \cot x \sec x \sin^2 x$

$$f(x) = \frac{\cos x}{\sin x} \cdot \frac{1}{\cos x} \cdot \frac{\sin^2 x}{1}$$

$$f(x) = \sin x$$

$$f'(x) = \cos x$$

9. $f(x) = \frac{(1 + \sin x)(1 - \sin x)}{\cos x}$

$$f(x) = \frac{1 - \sin^2 x}{\cos x}$$

$$f(x) = \frac{\cos^2 x}{\cos x}$$

$$f(x) = \cos x$$

$$f'(x) = -\sin x$$

5. $f(x) = \sin^3 x + \frac{\sin x}{\sec^2 x}$

$$f(x) = \sin^3 x + \sin x \cos^2 x$$

$$f(x) = \sin x (\sin^2 x + \cos^2 x)$$

$$f(x) = \sin x$$

$$f'(x) = \cos x$$

$$10. f(x) = \frac{\sin^2 x - \cos^2 x}{\sin x - \cos x}$$

$$f(x) = \frac{(\sin x + \cos x)(\cancel{\sin x - \cos x})}{\cancel{\sin x - \cos x}}$$

$$f(x) = \sin x + \cos x$$

$$f'(x) = \cos x - \sin x$$