



**Nombre de alumno: David Daniel
Vázquez Hernández**

Nombre del profesor: Jorge

**Nombre del trabajo: derivada
trigonometricas**

Materia: calculo

PASIÓN POR EDUCAR

Grado: 4 SEMESTRE

Grupo: A

1 $f(x) = \text{sen} \frac{1}{2} x$

2 $f(x) = \cos (7 - 2x)$

3 $f(x) = 3 \text{tg} 2x$

4 $f(x) = \sec (5x + 2)$

5 $f(x) = \sqrt[3]{\text{sen} x}$

6 $f(x) = \text{sen}^3 3x$

7 $f(x) = \text{cotg} (3 - 2x)$

8 $f(x) = \cos \frac{x+1}{x-1}$

9.- $f(x) = \cot(4x^2)$

10.-

$$f(x) = \cot^2(4x)$$

11.-

$$f(x) = \sec(5x)$$

12.-

$$f(x) = \csc\left(\frac{x}{2}\right)$$

Derivada de funciones trigonométricas

Donde u' es la derivada de u

Función	Derivada
$y = \operatorname{sen} u$	$y' = \cos u \cdot u'$
$y = \operatorname{cos} u$	$y' = -\operatorname{sen} u \cdot u'$
$y = \operatorname{tan} u$	$y' = \sec^2 u \cdot u'$
$y = \operatorname{cot} u$	$y' = -\operatorname{csc}^2 u \cdot u'$
$y = \operatorname{sec} u$	$y' = \sec u \operatorname{tan} u \cdot u'$
<u>$y = \operatorname{csc} u$</u>	$y' = -\operatorname{csc} u \operatorname{cot} u \cdot u'$

① $F(x) = \text{sen } \frac{1}{2}x$
 $F(x) = \cos(\frac{1}{2}x) \cdot \frac{1}{2}$
 $R: f(x) = \frac{1}{2} \cos(\frac{1}{2}x)$

② $F(x) = \cos(7-2x)$
 $F(x) = \cos(2x-7)$
 $F(x) = -\text{sen}(2x-7) \cdot 2$
 $R: f(x) = -2 \text{sen}(2x-7)$

③ ~~$F(x) = \cos$~~
 $F(x) = 3 + 92x$
 $F(x) = 3 \sec^2 2x \cdot 2$
 $R: f(x) = 6 \sec^2 2x$

④ $F(x) = \sec(5x+2)$
 $F(x) = \sec(5x+2) \cdot \tan(5x+2)$
 $F(x) = \sec(5x+2) \cdot \tan(5x+2) \cdot 5$
 $F(x) = 5 \sec(5x+2) \cdot \tan(5x+2)$

⑤ $F(x) = \sqrt[3]{\text{sen } x}$
 $F(x) = (\text{sen } x)^{\frac{1}{3}} \quad U = \text{sen } x \quad U' = \frac{1}{3}$
 $F(x) = (\cos x) \cdot \frac{1}{3} \quad f(x) = \frac{1}{3} (\text{sen } x)^{\frac{2}{3}} \cdot (\cos x)$
 $F(x) = \frac{1}{3} (\cos x) \cdot \frac{2}{3}$

⑥ $F(x) = \text{sen}^3 3x$
 $f(x) = [\text{sen } 3x]^3$
 $F(x) = 3 [\text{sen } 3x]^2 \cdot \cos(3x) (3)$
 $R: f(x) = 9 \text{sen}^2 3x \cdot \cos(3x)$

⑦ $F(x) = \cotg(3-2x)$
 $F(x) = -\text{csc}^2(3-2x) \cdot 2$
 $F(x) = -2 \text{csc}^2(3-2x)$
 $R: f(x) = -2 \text{csc}^2(3-2x)$

⑧ $F(x) = \cos \frac{x+1}{x-1}$
 $f(x) = -\text{sen} \frac{x+1}{x-1}$
 $f(x) = -\text{sen} \frac{x+1}{x-1} \cdot \frac{-2}{(x-1)^2}$
 $f(x) = \text{sen} \frac{x+1}{x-1} \cdot \frac{2}{x-1}$
 $R: f(x) = \frac{2}{x-1} \text{sen} \left(\frac{x+1}{x-1} \right)$

⑨ $F(x) = \cot(4x^2)$
 $F(x) = -\text{csc}^2(4x^2) \cdot 8x$
 $R: f(x) = -8x \text{csc}^2(4x^2)$

$F(x) = \frac{1}{3} \frac{1}{(\text{sen } x)^{\frac{2}{3}}} \frac{\cos x}{1} =$
 $= \frac{\cos x}{3(\text{sen } x)^{\frac{2}{3}}}$

$$(10) F(x) = \cot^2(4x)$$

$$f(x) = (\cot(4x))^2$$

$$f'(x) = 2(\cot(4x))' \cdot -\csc^2(4x) \cdot 4$$

$$f'(x) = -8\csc^2(4x) \cdot \cot(4x)$$

$$(11) F(x) = \sec(5x)$$

$$f'(x) = \sec(5x) \cdot \tan(5x) \cdot 5$$

$$f'(x) = 5 \sec(5x) \cdot \tan(5x)$$

$$(12) F(x) = \csc\left(\frac{x}{2}\right)$$

$$f'(x) = -\csc\left(\frac{x}{2}\right) \cdot \cot\left(\frac{x}{2}\right) \cdot \frac{1}{2}$$

$$f'(x) = -\frac{1}{2} \csc\left(\frac{x}{2}\right) \cdot \cot\left(\frac{x}{2}\right)$$