

Matematicas I

Ejercicios Funciones Trigonometricas

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Ejercicio 1

Obtener:

- a) Amplitud.
 - b) Periodo.
 - c) Mover 4 unidades hacia arriba en eje y.
 - d) Mover 2 unidades a la derecha en eje x.
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1) $2\text{sen}(3x)$

a) $\underline{2}$

b) $\underline{\frac{2\pi}{3}}$

c) $\underline{2\text{sen}(3x) + 4}$

d) $\underline{2\text{sen}(3x - 6)}$

2) $\frac{1}{4}\text{sen}(6x)$

a) $\underline{\frac{1}{4}}$

b) $\underline{\frac{\pi}{3}}$

c) $\underline{\frac{1}{4}\text{sen}(6x) + 4}$

d) $\underline{\frac{1}{4}\text{sen}(6x - 12)}$

$$3) \ 3\text{sen}(\frac{1}{4}x)$$

$$a) \underline{3}$$

$$b) \underline{8\pi}$$

$$c) \underline{3\text{sen}(\frac{1}{4}x) + 4}$$

$$d) \underline{\frac{1}{4}\text{sen}(6x - 12)}$$

$$4) \ \cos(\frac{3}{6}x)$$

$$a) \underline{1}$$

$$b) \underline{4\pi}$$

$$c) \underline{\cos(\frac{3}{6}x) + 4}$$

$$d) \underline{\cos(\frac{3}{6}x - 1)}$$

$$5) \ \frac{-2}{3}\cos(-2x)$$

$$a) \underline{\frac{-2}{3}}$$

$$b) \underline{\pi}$$

$$c) \underline{\frac{-2}{3}\cos(-2x) + 4}$$

$$d) \underline{\frac{-2}{3}\cos(-2x + 4)}$$

6) $-3\text{sen}(-x)$

a) 3

b) 2π

c) $-3\text{sen}(-x) + 4$

d) $-3\text{sen}(-x + 2)$

7) $\frac{2}{6}\cos(-5x)$

a) $\frac{2}{6}$

b) $\frac{2\pi}{5}$

c) $\frac{2}{6}\cos(-5x) + 4$

d) $\frac{2}{6}\cos(-5x + 10)$

8) $\frac{1}{3}\cos(\frac{1}{3}x)$

a) $\frac{1}{3}$

b) 6π

c) $\frac{1}{3}\cos(\frac{1}{3}x) + 4$

d) $\frac{1}{3}\cos(\frac{1}{3}x - \frac{2}{3})$

Ejercicios 2

a) Simplificar utilizando las identidades trigonométricas

1) $\cos(x)\tan(x)$

$$\cos(x)\tan(x) = \cos(x) \frac{\text{sen}(x)}{\cos(x)}$$

$$\underline{\cos(x)\tan(x) = \text{sen}(x)}$$

2) $\text{sen}(x)\sec(x)$

$$\text{sen}(x)\sec(x) = \text{sen}(x) \frac{1}{\cos(x)}$$

$$\text{sen}(x)\sec(x) = \frac{\text{sen}(x)}{\cos(x)}$$

$$\underline{\text{sen}(x)\sec(x) = \tan(x)}$$

3) $\tan(x)\csc(x)$

$$\tan(x)\csc(x) = \tan(x) \frac{1}{\text{sen}(x)}$$

$$\tan(x)\csc(x) = \frac{\text{sen}(x)}{\cos(x)} \frac{1}{\text{sen}(x)}$$

$$\tan(x)\csc(x) = \frac{1}{\cos(x)}$$

$$\underline{\tan(x)\csc(x) = \sec(x)}$$

$$4) \quad \text{sen}(u) + \cot(u)\cos(u)$$

$$\text{sen}(u) + \cot(u)\cos(u) = \text{sen}(u) + \frac{\cos(u)}{\text{sen}(u)}\cos(u)$$

$$\text{sen}(u) + \cot(u)\cos(u) = \text{sen}(u) + \frac{\cos^2(u)}{\text{sen}(u)}$$

$$\text{sen}(u) + \cot(u)\cos(u) = \frac{\text{sen}^2(u)}{\text{sen}(u)} + \frac{\cos^2(u)}{\text{sen}(u)}$$

$$\text{sen}(u) + \cot(u)\cos(u) = \frac{\text{sen}^2(u) + \cos^2(u)}{\text{sen}(u)}$$

$$\text{sen}(u) + \cot(u)\cos(u) = \frac{1}{\text{sen}(u)}$$

$$\underline{\text{sen}(u) + \cot(u)\cos(u) = \csc(u)}$$

$$5) \quad \cos^2(\theta)(1 + \tan^2(\theta))$$

$$\cos^2(\theta)(1 + \tan^2(\theta)) = \cos^2(\theta)\left(1 + \frac{\text{sen}^2(\theta)}{\cos^2(\theta)}\right)$$

$$\cos^2(\theta)(1 + \tan^2(\theta)) = \cos^2(\theta)\left(\frac{\cos^2(\theta)}{\cos^2(\theta)} + \frac{\text{sen}^2(\theta)}{\cos^2(\theta)}\right)$$

$$\cos^2(\theta)(1 + \tan^2(\theta)) = \cos^2(\theta)\left(\frac{\cos^2(\theta) + \text{sen}^2(\theta)}{\cos^2(\theta)}\right)$$

$$\cos^2(\theta)(1 + \tan^2(\theta)) = \cos^2(\theta)\left(\frac{1}{\cos^2(\theta)}\right)$$

$$\cos^2(\theta)(1 + \tan^2(\theta)) = \frac{\cos^2(\theta)}{\cos^2(\theta)}$$

$$\underline{\cos^2(\theta)(1 + \tan^2(\theta)) = 1}$$

$$6) \frac{\sec(t) - \cos(t)}{\sec(t)}$$

$$\frac{\sec(t) - \cos(t)}{\sec(t)} = \frac{\frac{1}{\cos(t)} - \cos(t)}{\sec(t)}$$

$$\frac{\sec(t) - \cos(t)}{\sec(t)} = \frac{\frac{1}{\cos(t)} - \frac{\cos^2(t)}{\cos(t)}}{\sec(t)}$$

$$\frac{\sec(t) - \cos(t)}{\sec(t)} = \frac{\frac{1 - \cos^2(t)}{\cos(t)}}{\sec(t)}$$

$$\frac{\sec(t) - \cos(t)}{\sec(t)} = \frac{\frac{\sec^2(t)}{\cos(t)}}{\sec(t)}$$

$$\frac{\sec(t) - \cos(t)}{\sec(t)} = \frac{\sec(t)\tan(t)}{\sec(t)}$$

$$\frac{\sec(t) - \cos(t)}{\sec(t)} = \tan(t)$$

$$7) \frac{\sec(x)\sec(x)}{\tan(x)}$$

$$\frac{\sec(x)\sec(x)}{\tan(x)} = \frac{\sec(x)\frac{1}{\cos(x)}}{\tan(x)}$$

$$\frac{\sec(x)\sec(x)}{\tan(x)} = \frac{\frac{\sec(x)}{\cos(x)}}{\tan(x)}$$

$$\frac{\sec(x)\sec(x)}{\tan(x)} = \frac{\tan(x)}{\tan(x)}$$

$$\frac{\sec(x)\sec(x)}{\tan(x)} = 1$$

$$8) \frac{\sec(x) - \cos(x)}{\tan(x)}$$

$$\frac{\sec(x) - \cos(x)}{\tan(x)} = \frac{\frac{1}{\cos(x)} - \cos(x)}{\tan(x)}$$

$$\frac{\sec(x) - \cos(x)}{\tan(x)} = \frac{\frac{1}{\cos(x)} - \frac{\cos^2(x)}{\cos(x)}}{\tan(x)}$$

$$\frac{\sec(x) - \cos(x)}{\tan(x)} = \frac{\frac{1 - \cos^2(x)}{\cos(x)}}{\tan(x)}$$

$$\frac{\sec(x) - \cos(x)}{\tan(x)} = \frac{\frac{\sin^2(x)}{\cos(x)}}{\tan(x)}$$

$$\frac{\sec(x) - \cos(x)}{\tan(x)} = \frac{\sin(x)\tan(x)}{\tan(x)}$$

$$\frac{\sec(x) - \cos(x)}{\tan(x)} = \sin(x)$$

$$9) \frac{\sin(x)}{\csc(x)} + \frac{\cos(x)}{\sec(x)}$$

$$\frac{\sin(x)}{\csc(x)} + \frac{\cos(x)}{\sec(x)} = \frac{\sin(x)}{\csc(x)} + \frac{\cos(x)}{\frac{1}{\cos(x)}}$$

$$\frac{\sin(x)}{\csc(x)} + \frac{\cos(x)}{\sec(x)} = \frac{\sin(x)}{\frac{1}{\sin(x)}} + \frac{\cos(x)}{\frac{1}{\cos(x)}}$$

$$\frac{\sin(x)}{\csc(x)} + \frac{\cos(x)}{\sec(x)} = \sin^2(x) + \frac{\cos(x)}{\frac{1}{\cos(x)}}$$

$$\frac{\sin(x)}{\csc(x)} + \frac{\cos(x)}{\sec(x)} = \sin^2(x) + \cos^2(x)$$

$$\frac{\sin(x)}{\csc(x)} + \frac{\cos(x)}{\sec(x)} = 1$$

$$10) \tan(x)\cos(x)\csc(x)$$

$$\tan(x)\cos(x)\csc(x) = \frac{\text{sen}(x)}{\cos(x)}\cos(x)\csc(x)$$

$$\tan(x)\cos(x)\csc(x) = \frac{\text{sen}(x)}{\cos(x)}\cos(x)\csc(x)$$

$$\tan(x)\cos(x)\csc(x) = \frac{\text{sen}(x)}{\cos(x)}\cos(x)\frac{1}{\text{sen}(x)}$$

$$\tan(x)\cos(x)\csc(x) = \frac{1}{\cos(x)}\cos(x)$$

$$\tan(x)\cos(x)\csc(x) = \frac{\cos(x)}{\cos(x)}$$

$$\underline{\tan(x)\cos(x)\csc(x) = 1}$$