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.
 - $1) \ 2sen(3x)$

$$a)\underline{2}$$

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

$$c)2sen(3x) + 4$$

$$d)2sen(3x-6)$$

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

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

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

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

$$a) \frac{1}{\frac{4}{4}} \\ b) \frac{\pi}{\frac{3}{3}} \\ c) \frac{1}{4} sen(6x) + 4 \\ d) \frac{1}{4} sen(6x - 12)$$

- 3) $3sen(\frac{1}{4}x)$
- $a)\underline{3}$
- $b)\underline{8\pi}$
- $c)3sen(\frac{1}{4}x) + 4$ $d)3sen(\frac{1}{4}x \frac{1}{2})$

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

- $a)\underline{1}$

- $c)\frac{cos(\frac{3}{6}x) + 4}{d)cos(\frac{3}{6}x 1)}$
- 5) $\frac{-2}{3}cos(-2x)$

- a) $\frac{-2}{3}$ b) π c) $\frac{-2}{3}cos(-2x) + 4$ d) $\frac{-2}{3}cos(-2x + 4)$

- 6) -3sen(-x)
- $a)\underline{3}$
- $b)2\pi$
- c) 3sen(-x) + 4
- d) -3sen(-x+2)
- 7) $\frac{2}{6}cos(-5x)$

- $a)\frac{2}{6}$ $b)\frac{2\pi}{5}$ $c)\frac{2}{6}cos(-5x) + 4$ $d)\frac{2}{6}cos(-5x + 10)$
- $8) \ \frac{1}{3}cos(\frac{1}{3}x)$

- $b)\underline{6\pi}$ $c)\frac{1}{3}cos(\frac{1}{3}x) + 4$ $d)\frac{1}{3}cos(\frac{1}{3}x \frac{2}{3})$

Ejercicios 2

- a) Simplificar utilizando las identidades trigonométricas
 - 1) cos(x)tan(x)

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

$$cos(x)tan(x) = sen(x)$$

 $2) \ sen(x)sec(x)$

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

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

$$sen(x)sec(x) = tan(x)$$

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

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

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

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

$$tan(x)csc(x) = sec(x)$$

4)
$$sen(u) + cot(u)cos(u)$$

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

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

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

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

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

$$sen(u) + cot(u)cos(u) = csc(u)$$

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

$$\begin{aligned} \cos^2(\theta)(1+\tan^2(\theta)) &= \cos^2(\theta)(1+\frac{sen^2(\theta)}{\cos^2(\theta)}) \\ &\cos^2(\theta)(1+\tan^2(\theta)) = \cos^2(\theta)(\frac{\cos^2(\theta)}{\cos^2(\theta)}+\frac{sen^2(\theta)}{\cos^2(\theta)}) \\ &\cos^2(\theta)(1+\tan^2(\theta)) = \cos^2(\theta)(\frac{\cos^2(\theta)+sen^2(\theta)}{\cos^2(\theta)}) \\ &\cos^2(\theta)(1+\tan^2(\theta)) = \cos^2(\theta)(\frac{1}{\cos^2(\theta)}) \\ &\cos^2(\theta)(1+\tan^2(\theta)) = \frac{\cos^2(\theta)}{\cos^2(\theta)} \\ &\frac{\cos^2(\theta)(1+\tan^2(\theta)) = 1}{\cos^2(\theta)} \end{aligned}$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$tan(x)cos(x)csc(x) = 1$$