PAUTA TRABAJO GRUPAL 3 - BAIN 012 – FORMA 1

1.- Resolver la ecuación: $\cos x - sen2x - \cos 3x = 0$

$\cos x - \cos 3x - sen2x = 0$

$2sen\ 2x\ senx - sen\ 2x = 0$

$sen\ 2x(2sen\ x - 1) = 0 \Rightarrow sen\ 2x = 0\ \vee\ sen\ x = 1/2$

- Si $sen\ 2x = 0 \Rightarrow 2x = n\pi \Rightarrow\ x = \dfrac{n\pi}{2} n \in \mathbb{Z}$
- Si $sen\ x = 1/2 \Rightarrow x = \dfrac{\pi}{6} + 2n\pi\ \vee\ x = \dfrac{5\pi}{6} + 2n\pi,\ n \in \mathbb{Z}$

2.- Demostrar: $\cos(arc\ senx) = \sqrt{1-x^2}$, sea $\alpha = arc\ senx$

$sen\ \alpha = x$

$\cos(arc\ sen\ x) = \cos\alpha$

$= \sqrt{1-x^2}$

FORMA 2

1.- Resolver la ecuación: $sen\ 5x + sen\ x = sen\ 3x$

$sen\ 5x - sen\ 3x + sen\ x = 0$

$2\cos\ 4x + sen\ x + sen\ x = 0 \Rightarrow sen\ x(2\cos 4x + 1) = 0 \Rightarrow senx = 0\ \vee\ \cos 4x = -\dfrac{1}{2}$

- Si $sen\ 2x = 0 \Rightarrow x = n\pi,\ n \in \mathbb{Z}$
- Si $\cos 4\ x = -\dfrac{1}{2} \Rightarrow 4x = \dfrac{2\pi}{3} + 2n\pi \Rightarrow x = \dfrac{\pi}{6} + n\pi,\ n \in \mathbb{Z}$

  $\vee\ 4x = \dfrac{4\pi}{3} + 2n\pi \Rightarrow x = \dfrac{\pi}{3} + n\pi,\ n \in \mathbb{Z}$

2.- Demostrar: $2\ arc\ \tan\dfrac{1}{4} = arc\ \tan\dfrac{8}{15}$, Sean: $\alpha = arc\ \tan\dfrac{1}{4}$

Equivale a demostrar $2\alpha = \beta$ $\tan\ \alpha = \dfrac{1}{4}$

Equivale a demostrar $\tan 2\alpha = \tan\beta$ $\beta = arc\ \tan\dfrac{8}{15}$

$\tan 2\alpha = \dfrac{2\tan\alpha}{1-\tan^2\alpha} = \dfrac{8}{15} = \tan\beta$

$\therefore 2\,\text{arc}\ \tan\dfrac{1}{4} = \text{arc}\ \tan\dfrac{8}{15}$

FORMA 3

1.- Resolver la ecuación: $sen\ 5x - sen\ 7x = sen\ x \Rightarrow 2\cos 6x\ sen(-x) - senx = 0$

$\Rightarrow 2\cos\ 6x\ sen\ x + sen\ x = 0 \Rightarrow senx(2\cos 6x + 1) = 0$

$\Rightarrow sen\ x = 0\ \vee\ \cos 6x = -\dfrac{1}{2}$

- Si $sen\ x = 0 \Rightarrow x = n\pi,\ n \in \mathbb{Z}$
- Si

  $\cos 6\ x = -\dfrac{1}{2} \Rightarrow 6x = \dfrac{2\pi}{3} + 2n\pi\ \vee\ 6x = \dfrac{4\pi}{3} + 2n\pi \Rightarrow x = \dfrac{\pi}{9} + \dfrac{n\pi}{3}\ \vee\ x = \dfrac{2\pi}{9} + \dfrac{n\pi}{3},\ n \in \mathbb{Z}$

2.- Demostrar: $sen(arc\ \cos x) = \sqrt{1-x^2}$, sea $\alpha = arc\ \cos x$

$\cos\ \alpha = x$

$sen(arc\ \cos\ x) = sen\ \alpha = \sqrt{1-x^2}$