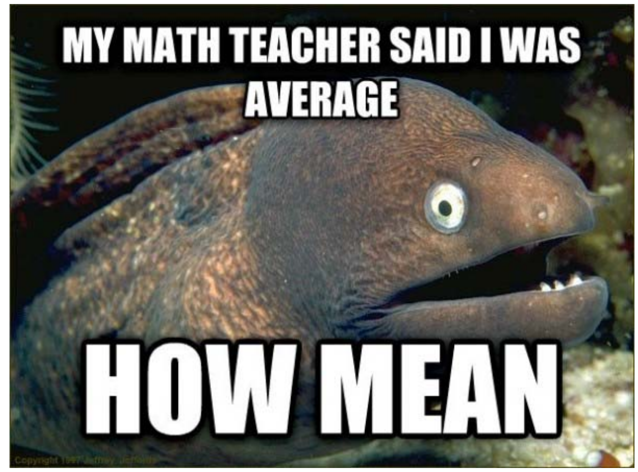
Tuesday, March 7

- ✧ Opener - Handout
- ✧ 5.3 Day 2 Examples
- ✧ Practice



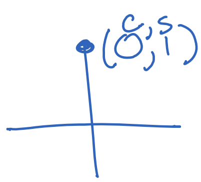
5.3 Prove the Identity

① $\sin\left(\frac{\pi}{2} - x\right) = \cos x$ (a = $\frac{\pi}{2}$, −b = −x)

$\sin\frac{\pi}{2}\cos x - \cos\frac{\pi}{2}\sin x =$

$1 \cdot \cos x - 0 \cdot \sin x =$

$\cos x = \cos x$ ✓



② $\cos\left(\frac{\pi}{2} - x\right) = \sin x$ (a = $\frac{\pi}{2}$, −b = −x)

$\cos\frac{\pi}{2}\cos x + \sin\frac{\pi}{2}\sin x =$

$0 \cdot \cos x + 1 \cdot \sin x =$

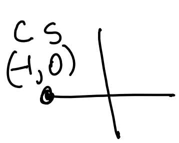
$\sin x = \sin x$ ✓

③ $\sin(x + \pi) = -\sin x$

$\sin x \cos\pi + \cos x \sin\pi =$

$\sin x(-1) + \cos x(0) =$

$-\sin x = -\sin x$ ✓



④ $\sin(a+b) + \sin(a-b) = 2\sin a\cos b$

$\sin a\cos b + \cos a\sin b + \sin a\cos b - \cos a\sin b =$

$\sin a\cos b + \cos a \sin b + \sin a \cos b - \cos a \sin b =$

$2\sin a\cos b = 2\sin a \cos b$ ✓

Like #51

(5) $\sin(3a) + \sin(a) = 2\sin(2a)\cos(a)$

$\sin(2a+a) + \sin(2a-a) =$

$\sin 2a\cos a + \cos 2a \sin a + \sin 2a\cos a - \cos 2a \sin a =$

$2\sin 2a\cos a = 2\sin 2a \cos a$ ✓

Hint for #50

$\cos 3x = \cos^3 x - 3\sin^2 x\cos x$

$\cos(2x+x) =$

$\cos 2x\cos x - \sin 2x \sin x =$

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

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

$\cos^3 x - \sin^2 x\cos x - \sin^2 x\cos x - \sin^2 x\cos x =$

$\cos^3 x - 3\sin^2 x\cos x =$ ✓