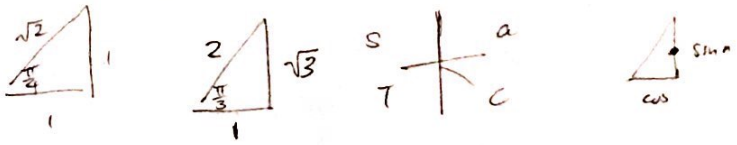


1. Eval $\sin\left(\frac{\pi}{2}\right)\cot\left(\frac{5\pi}{3}\right) + \sec\left(\frac{5\pi}{4}\right)$

$= (1) \cdot \frac{1}{\tan\left(\frac{5\pi}{3}\right)} + \frac{1}{\cos\left(\frac{5\pi}{4}\right)}$

$= 1 \cdot \left(1 \div -\frac{\sqrt{3}}{1}\right) + \left(1 \div -\frac{1}{\sqrt{2}}\right)$

$= 1 \cdot \left(-\frac{1}{\sqrt{3}}\right) + \left(-\sqrt{2}\right)$

$= -\frac{1}{\sqrt{3}} + -\sqrt{2}$

$= \frac{-1-\sqrt{6}}{\sqrt{3}}$

2. Evaluate $\sin\left(\frac{13\pi}{12}\right)$

$= \sin\left(\frac{9\pi}{12} + \frac{4\pi}{12}\right) = \sin\left(\frac{3\pi}{4} + \frac{\pi}{3}\right)$

$= \sin\left(\frac{3\pi}{4}\right)\cos\left(\frac{\pi}{3}\right) + \cos\left(\frac{3\pi}{4}\right)\sin\left(\frac{\pi}{3}\right)$

$= \left(\frac{1}{\sqrt{2}}\right)\left(\frac{1}{2}\right) + \left(-\frac{1}{\sqrt{2}}\right)\left(\frac{\sqrt{3}}{2}\right)$

$= \frac{1}{2\sqrt{2}} + \left(-\frac{\sqrt{3}}{2\sqrt{3}}\right)$

$= \frac{1-\sqrt{3}}{2\sqrt{2}}$

3. Express $f(x) = \frac{1}{\sqrt{2}}\cos(x) + \frac{1}{\sqrt{2}}\sin(x)$ as cosine function w/ hor-translation

$= \cos\left(\frac{\pi}{4}\right)\cos(x) + \sin\left(\frac{\pi}{4}\right)\sin(x)$

$= \cos\left(\frac{\pi}{4} - x\right)$

$= \cos\left(-\left(x - \frac{\pi}{4}\right)\right)$

$\frac{1}{\sqrt{2}} = \cos\left(\frac{\pi}{4}\right)$ or $\sin\left(\frac{\pi}{4}\right)$

$\therefore$ is a cosine function with a horizontal translation of $\frac{\pi}{4}$ right

Hilbert

4. Sketch $f(x) = -2\sin\left(4x - \frac{\pi}{6}\right) + 5$

$= -2\sin\left(4\left(x - \frac{\pi}{24}\right)\right) + 5$

amp: 2

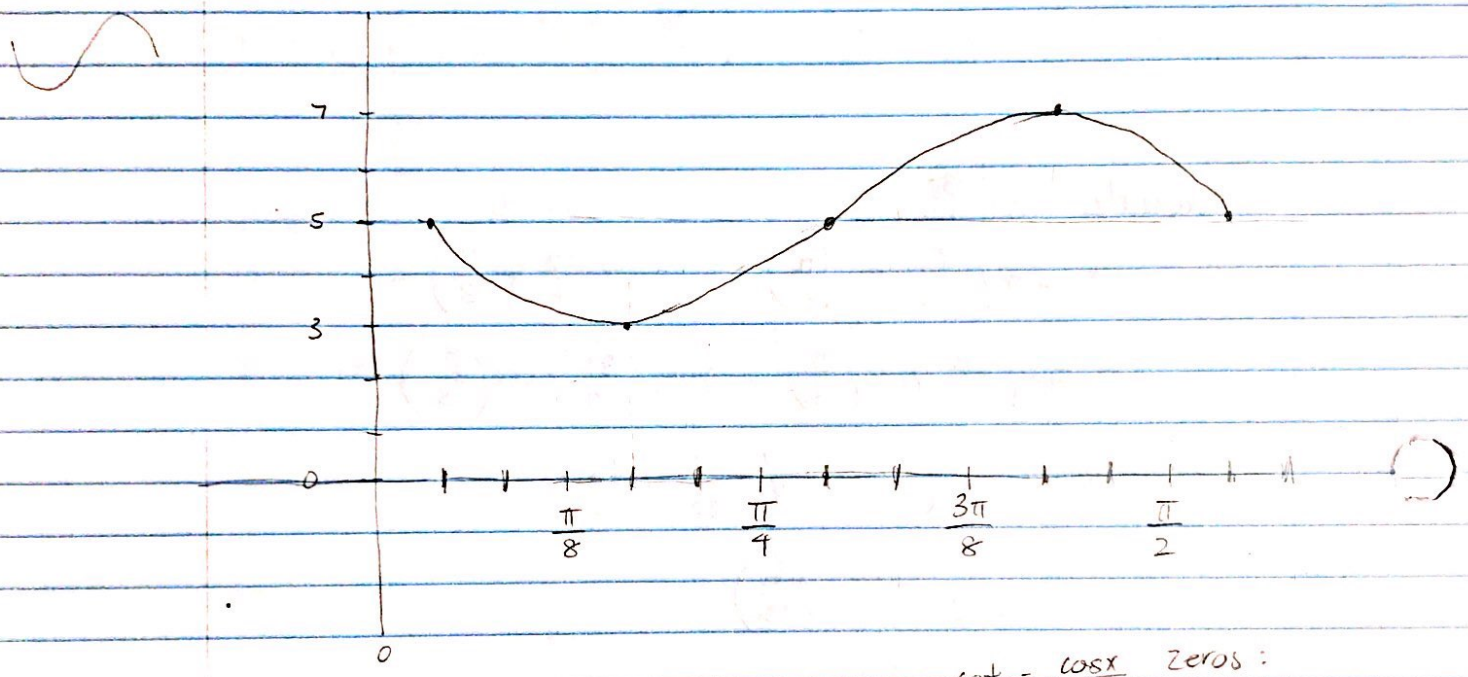
axis: $y = 5$

reflection along x-axis!

$\frac{1}{4}$ per: $\frac{1}{8}$

period $= \frac{2\pi}{k} = \frac{2\pi}{4} = \frac{\pi}{2}$

translation $\frac{\pi}{24}$ right



5. Sketch $f(x) = 2\cot\left(x - \frac{\pi}{4}\right) + 1$

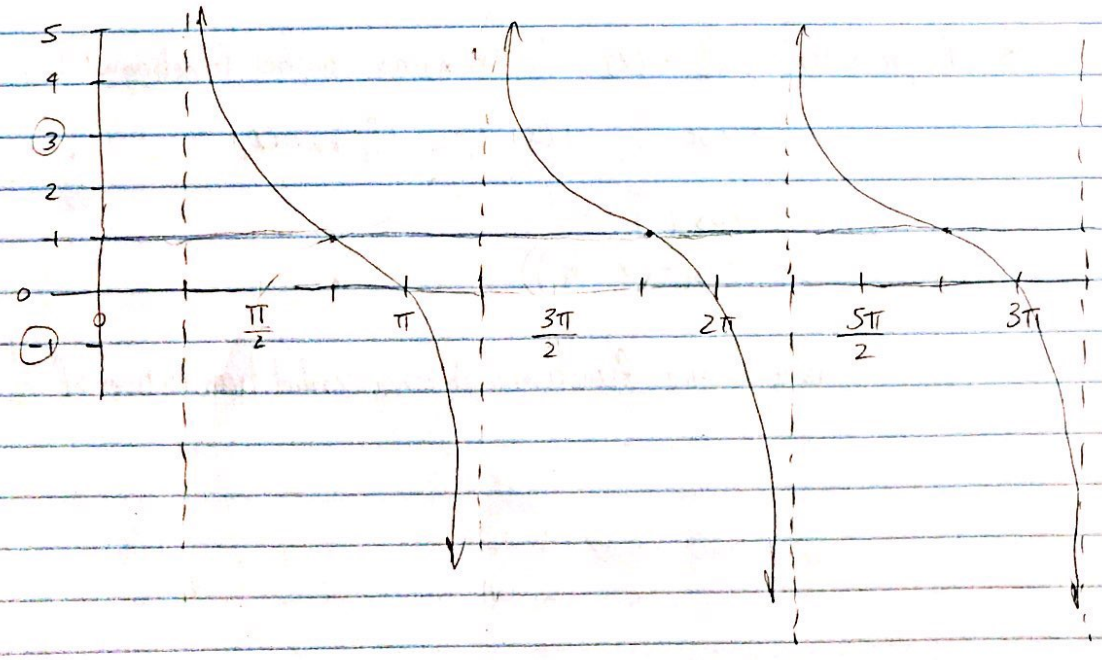
$\cot = \frac{\cos x}{\sin x}$ zeros: asymp: $\frac{(4n+1)\pi}{4}$

amp: 2

axis: $y = 1$

period $= 2\pi$

translation hor: $\frac{\pi}{4}$ right



6. Determine one sine equation and one cosine equation for the following graph

sine :

amp : 2 period $\frac{2\pi}{k} = \frac{\pi}{2}$ $\frac{\pi k}{2} = 2\pi$ $k = 4$

axis : $y = 1$ horz translation : $\frac{5\pi}{24}$ right

① $f(x) = 2\sin\left(4\left(x - \frac{5\pi}{24}\right)\right) + 1$

cos :

amp 2 period = 4

axis : $y = 1$ horz translation : $\frac{\pi}{3}$ right

② $f(x) = 2\cos\left(4\left(x - \frac{\pi}{3}\right)\right) + 1$