

1.  $y = 4 \cos\left(\frac{1}{3}x\right) - 1$      $a=4$   $b=\frac{1}{3}$   $c=0$   $d=-1$

amplitude = 4

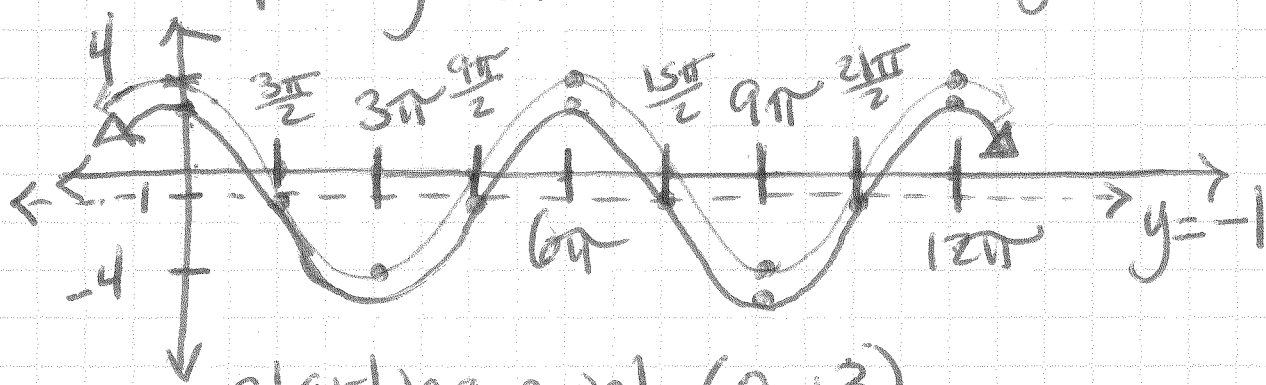
P.S.  $\frac{-c}{|b|} = \frac{-0}{\left(\frac{1}{3}\right)} = 0$

period  $\frac{2\pi}{|b|} = \frac{2\pi}{\left(\frac{1}{3}\right)} = 6\pi$

V.S.  $d = -1$

frequency =  $\frac{1}{6\pi}$

ML  $y = -1$



starting point  $(0, +3)$

2.  $y = -\cos\left(x + \frac{\pi}{3}\right) + 3$

amp. 1 (w/ reflection)

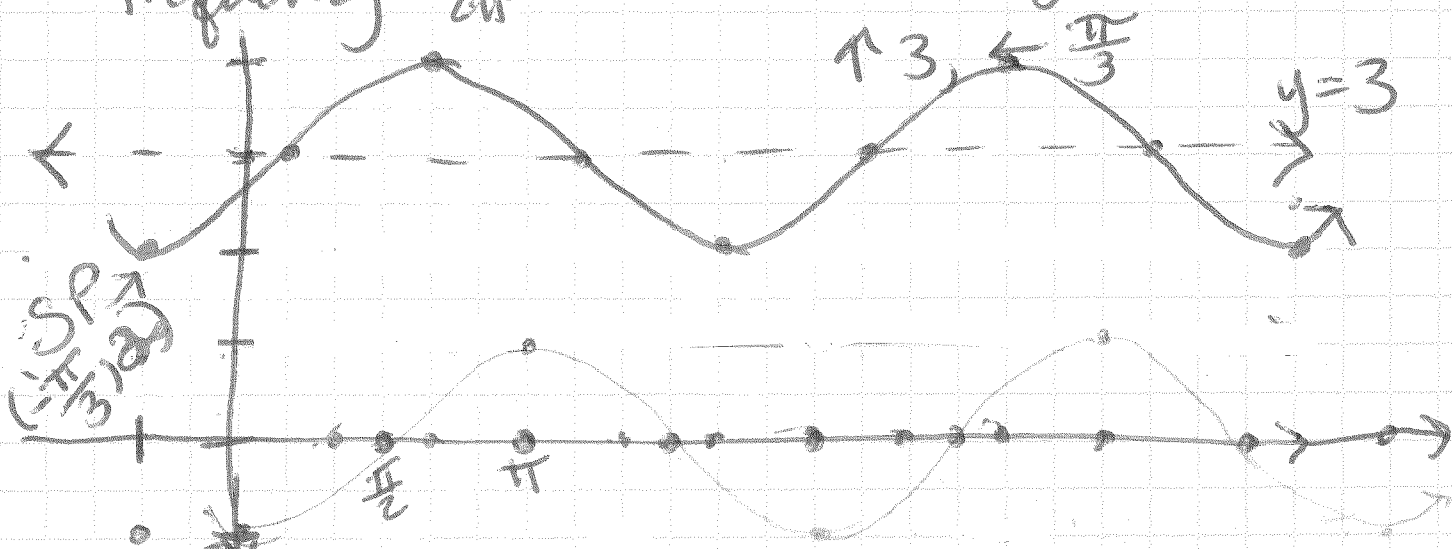
P.S.  $\frac{c}{|b|} = \frac{-\left(\frac{\pi}{3}\right)}{|1|} = -\frac{\pi}{3}$

period  $\frac{2\pi}{|b|} = \frac{2\pi}{1} = 2\pi$

V.S.  $d = +3$

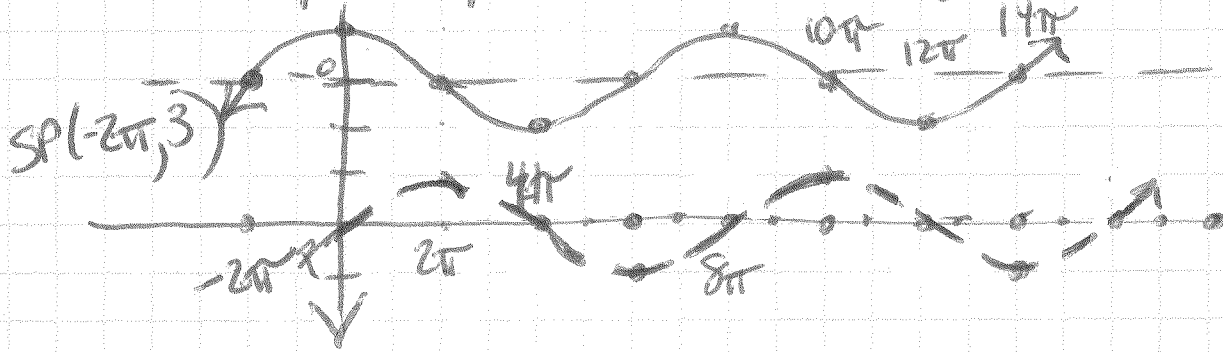
frequency  $\frac{1}{2\pi}$

ML  $y = 3$



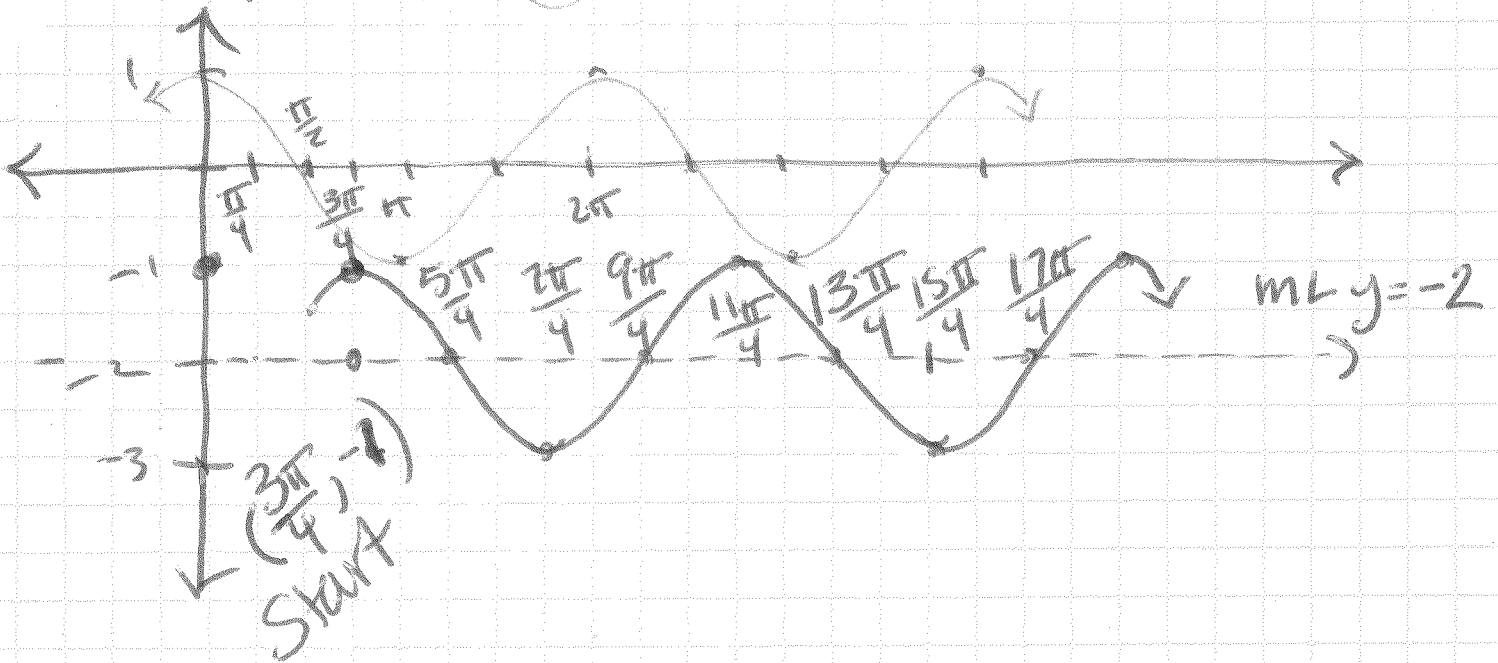
$$3. y = \sin\left(\frac{1}{4}x + \frac{\pi}{2}\right) + 3$$

amp 1 per  $\frac{2\pi}{b} = 8\pi$  freq.  $= \frac{1}{8\pi}$  VS  $y=3$  PS  $= -2\pi$



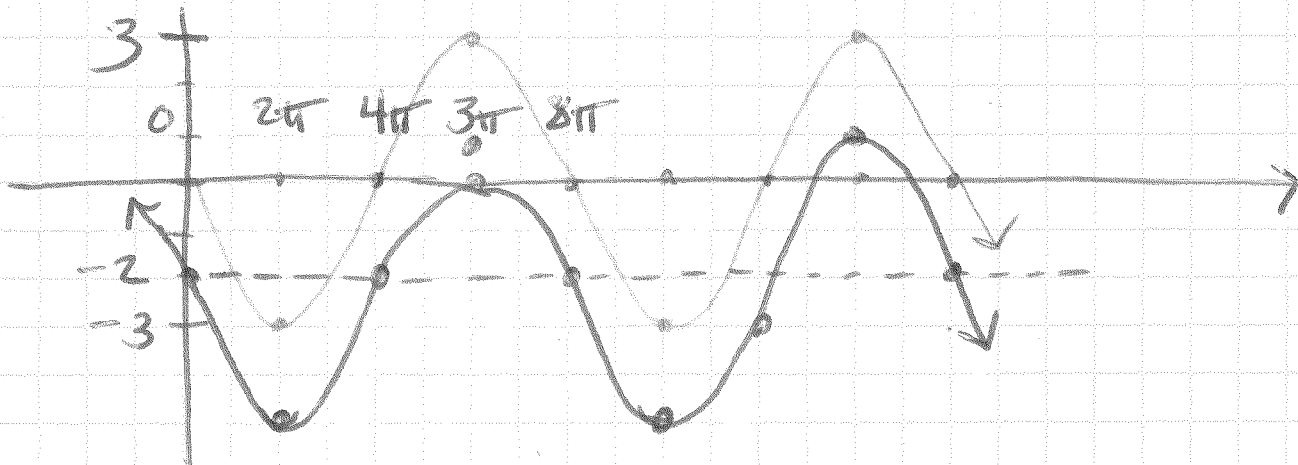
$$4. y = \cos\left(x - \frac{3\pi}{4}\right) - 2$$

amp 1 per  $(2\pi)$  fre  $\frac{1}{2\pi}$  VS  $y=-2$  PS  $= \frac{c}{b} = \frac{3\pi}{4}$



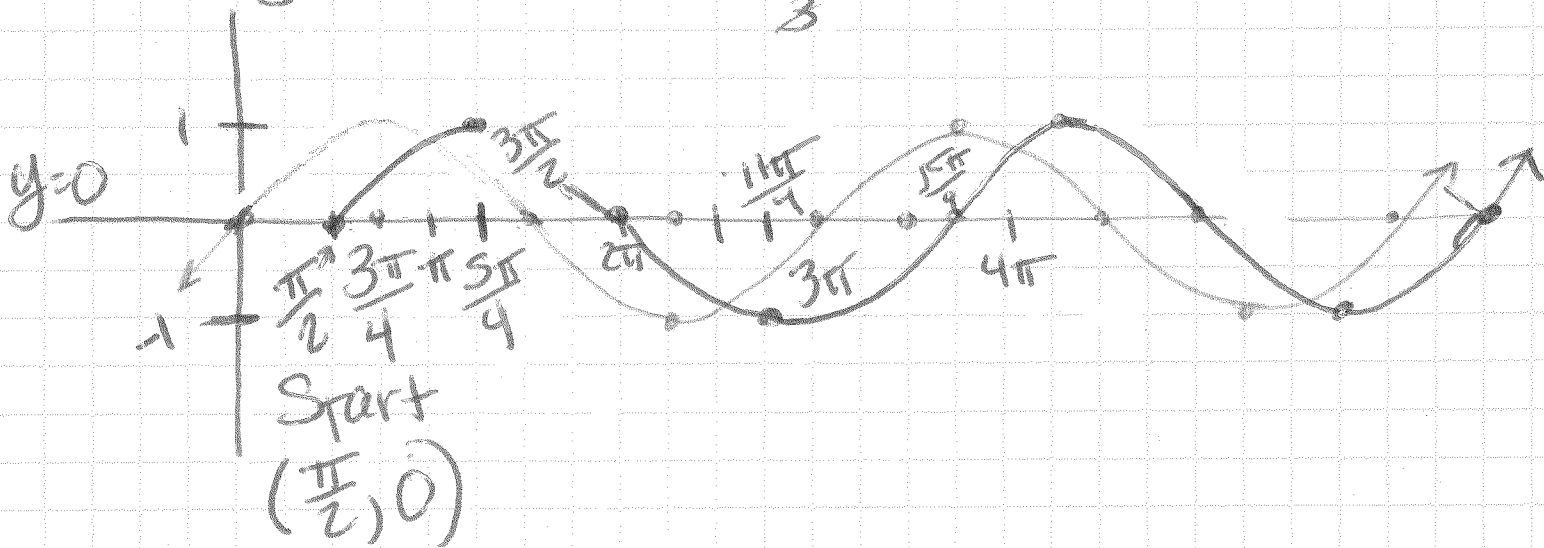
b.  $y = -3\sin\left(\frac{1}{4}x\right) - 2$  Amp 3 flip per  $\frac{2\pi}{b} = \frac{2\pi}{\frac{1}{4}} = 8\pi$  frequency  $\frac{1}{8\pi}$

VS  $y = -2$  PS  $\frac{-c}{b} = 0$  Start:  $(0, -2)$



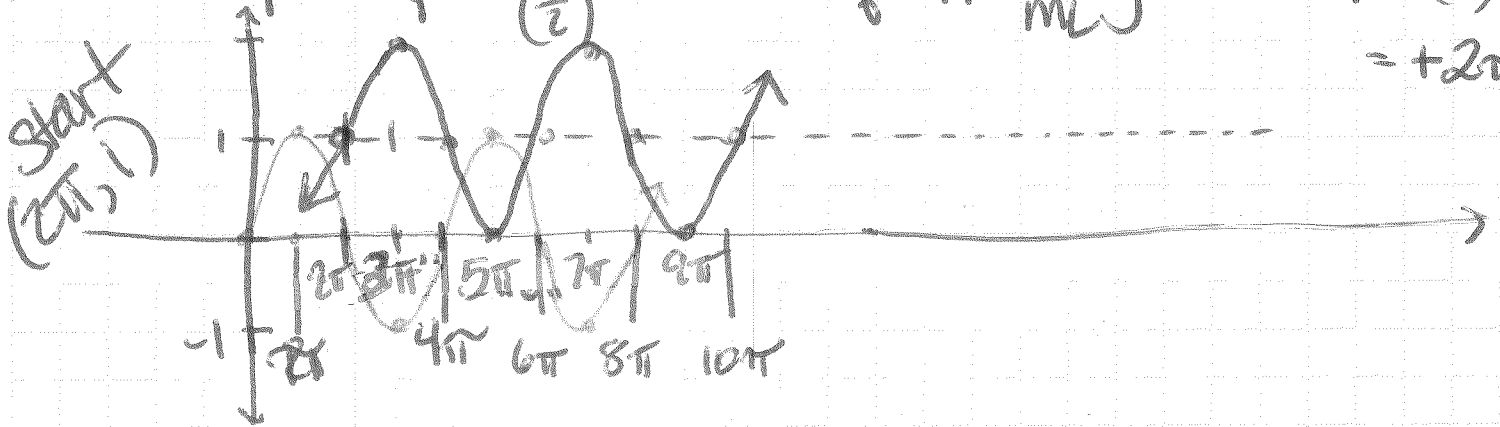
7.  $y = \sin\left(\frac{2}{3}x - \frac{\pi}{3}\right)$  amp = 1 per  $\frac{2\pi}{b} = \frac{2\pi}{\left(\frac{2}{3}\right)} = 3\pi$

VS 0 PS  $\frac{-c}{b} = \frac{+\left(\frac{\pi}{3}\right)}{\frac{2}{3}} = \frac{\pi}{2}$  freq.  $= \frac{1}{3\pi}$

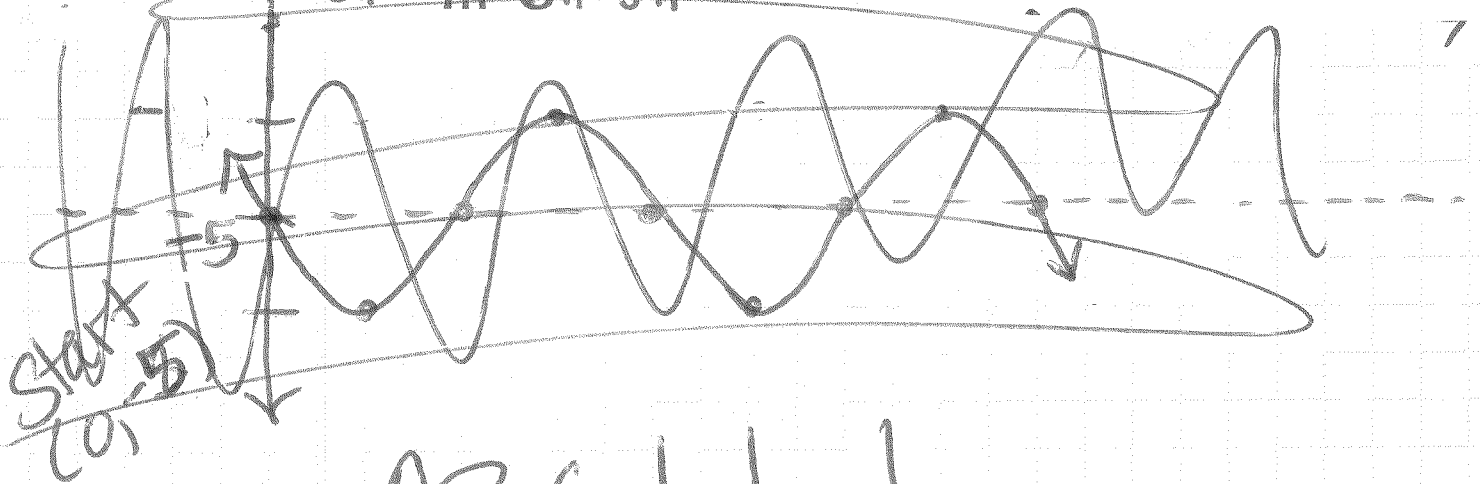


$$5. y = \sin\left(\frac{1}{2}x - \pi\right) + 1$$

Amp = 1 per  $\frac{2\pi}{(\frac{1}{2})} = 4\pi$  freq =  $\frac{1}{4\pi}$  VS  $y=1$  PS  $\frac{c}{|b|} = \frac{+\pi}{(\frac{1}{2})} = +2\pi$



6.  ~~$y = -3\sin\left(\frac{1}{4}x\right) - 2$  Amp 3 w/ Reflection~~  
~~per  $\frac{2\pi}{(\frac{1}{4})} = 8\pi$  freq =  $\frac{1}{8\pi}$  VS  $y=-2$  PS  $\frac{c}{b} = 0$~~



ARG!!!

$$8. y = 2 \cos\left(x - \frac{3\pi}{2}\right) + 3$$

Amp = 2 per  $\frac{2\pi}{b} = \frac{2\pi}{1}$  freq. =  $\frac{1}{2\pi}$  m/c vs  $y = 3$

PS  $\frac{-c}{|b|} = \frac{+\left(\frac{3\pi}{2}\right)}{1}$

