# Avoiding Horizontal Reflections

1. $y = \cos\left(-\frac{2}{3}x\right) \Rightarrow$ $\boxed{y = \cos\left(\frac{2}{3}x\right)}$

amp = 1

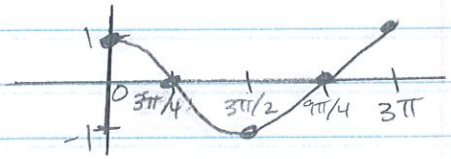
period = $\frac{2\pi}{2/3} = 2\pi \cdot \frac{3}{2} = 3\pi$

PS = none

VS = none

D: $[0, 3\pi]$

R: $[-1, 1]$




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

amp = 2

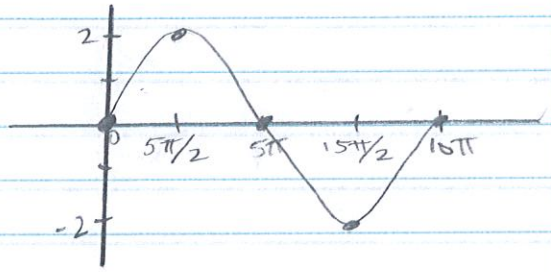
period = $\frac{2\pi}{1/5} = 2\pi \cdot 5 = 10\pi$

PS = none

VS = none

D: $[0, 10\pi]$

R: $[-2, 2]$




3. $y = \sin(-4\theta) \Rightarrow$ $\boxed{y = -\sin(4\theta)}$

amp = 1

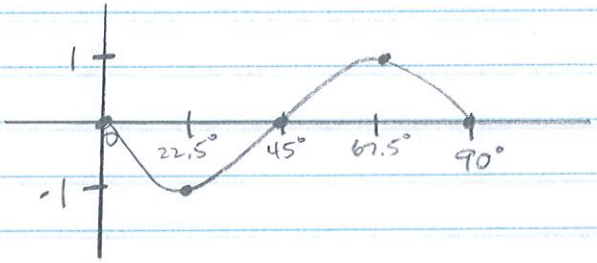
period = $\frac{360}{4} = 90°$

PS = none

VS = none

D: $[0, 90°]$

R: $[-1, 1]$



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

amp = 4

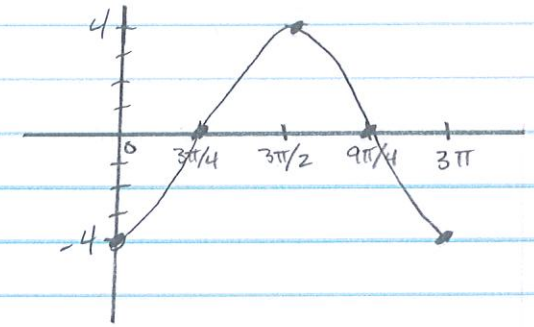
period = $\frac{2\pi}{2/3} = 2\pi \cdot \frac{3}{2} = 3\pi$

PS = none

VS = none

D: $[0, 3\pi]$

R: $[-4, 4]$




5. $y = -\frac{1}{2}\sin(-3\theta) \Rightarrow \boxed{y = \frac{1}{2}\sin(3\theta)}$

amp = $\frac{1}{2}$

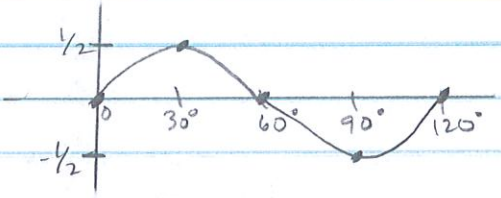
period = $\frac{360}{3} = 120°$

PS = none

VS = none

D: $[0, 120°]$

R: $[-\frac{1}{2}, \frac{1}{2}]$




6. $y = \cos(-x + \pi) \Rightarrow y = \cos(-(x - \pi))$

$\boxed{y = \cos(x - \pi)}$

amp = 1

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

PS = $\pi$

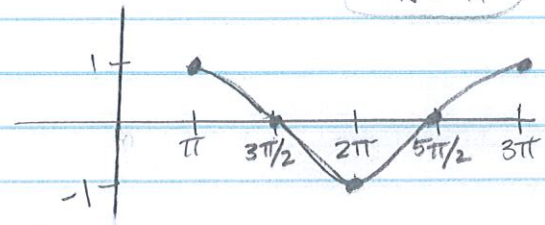
VS = none

D: $[\pi, 3\pi]$

R: $[-1, 1]$

$x - \pi = 0$ $\quad x - \pi = 2\pi$

$x = \pi$ $\quad x = 3\pi$



7. $y = 1 + 3\cos\left(-\frac{\pi}{2}x\right) \Rightarrow \boxed{y = 3\cos\left(\frac{\pi}{2}x\right) + 1}$

amp = 3

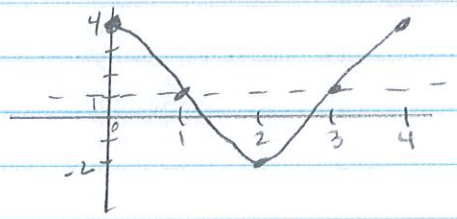
period = $\frac{2\pi}{\pi/2} = 2\pi \cdot \frac{2}{\pi} = 4$

PS = none

VS = 1

D: $[0, 4]$

R: $[-2, 4]$




8. $y = 3 + \sin\left(-\frac{1}{2}x - \frac{\pi}{6}\right) \Rightarrow \boxed{y = -\sin\left(\frac{1}{2}x + \frac{\pi}{6}\right) + 3}$

↖ Reflect

amp = $|-1| = 1$

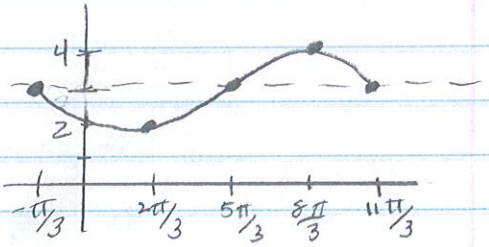
period = $\frac{2\pi}{1/2} = 2\pi \cdot 2 = 4\pi$

PS = $-\frac{\pi}{3}$

VS = 3

D: $\left[-\frac{\pi}{3}, \frac{11\pi}{3}\right]$

R: $[2, 4]$




$\frac{1}{2}x + \frac{\pi}{6} = 0$

$\frac{1}{2}x = -\frac{\pi}{6}$

$x = -\frac{\pi}{6} \cdot 2 = -\frac{\pi}{3}$

$\frac{1}{2}x + \frac{\pi}{6} = 2\pi$

$\frac{1}{2}x = \frac{12\pi}{6} - \frac{\pi}{6}$

(2) $\frac{1}{2}x = \frac{11\pi}{6} \cdot (2)$ $\quad x = \frac{11\pi}{3}$

9. $y = 4\cos(-6\theta + 420°) - 2 \Rightarrow \boxed{y = 4\cos(6\theta - 420°) - 2}$

amp = 4

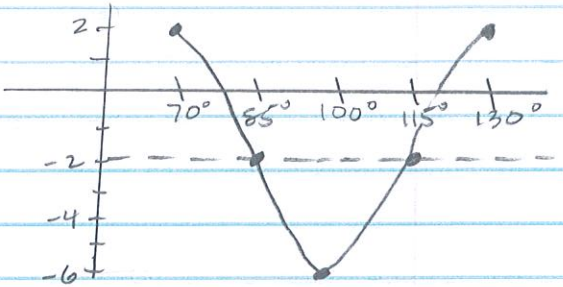
period = $\frac{360}{6} = 60°$

PS =

VS = −2

D: [70°, 130°]

R: [−6, 2]




$6\theta - 420 = 0$ $\quad$ $6\theta - 420 = 360$

$6\theta = 420$ $\quad$ $6\theta = 780$

$\theta = 70°$ $\quad$ $\theta = 130°$

10. $y = 4\sin(-3\theta - 99°) - 1 \Rightarrow \boxed{y = -4\sin(3\theta + 99°) - 1}$

amp = $|-4| = 4$

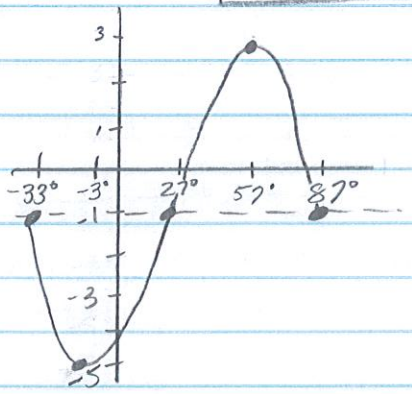
period = $\frac{360}{3} = 120°$

PS = −33°

VS = −1

D: [−33°, 87°]

R: [−5, 3]




$3\theta + 99 = 0$ $\quad$ $3\theta + 99 = 360$

$3\theta = -99$ $\quad$ $3\theta = 261$

$\theta = -33°$ $\quad$ $\theta = 87°$