

HWS-11

① amp = 3
period = $2\pi \rightarrow \frac{2\pi}{|b|} = 2\pi \rightarrow b = 1$

a) $y = 3 \sin x$

b) $y = 3 \cos(x - \frac{\pi}{2})$ horizontal shift $\frac{\pi}{2}$ right

② amp = 2
period = $2\pi \rightarrow b = 1$
vertical shift = 2

a) $y = 2 \sin(x + \frac{\pi}{2}) + 2$ horizontal shift $\frac{\pi}{2}$ left

b) $y = 2 \cos x + 2$

③ amp = 2
period = $\frac{\pi}{2} \rightarrow \frac{2\pi}{|b|} = \frac{\pi}{2}$
 $\pi |b| = 4\pi$
 $b = 4$

a) $y = 2 \sin(4(x + \frac{\pi}{8}))$

or
 $y = 2 \sin(4x + \frac{\pi}{2})$

horizontal shift $\frac{\pi}{8}$ left

b) $y = 2 \cos 4x$

④ amp = 3
period = $4\pi \rightarrow \frac{2\pi}{|b|} = 4\pi$
 $4\pi b = 2\pi$
 $b = \frac{1}{2}$

a) $y = 3 \sin(\frac{1}{2}(x + \pi)) - 1$ horizontal shift π units left

or $y = 3 \sin(\frac{1}{2}x + \frac{\pi}{2})$

b) $y = 3 \cos(\frac{1}{2}x) - 1$

⑤ amp = 3

period = 4π $\frac{2\pi}{b} = 4\pi$

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

vertical shift up 1 unit

a) $y = 3 \sin(\frac{1}{2}x) + 1$

b) $y = 3 \cos(\frac{1}{2}(x - \pi)) + 1$

horizontal shift
 π units right

or

$y = 3 \cos(\frac{1}{2}x - \frac{\pi}{2}) + 1$

⑥ amp = 1

period = 2π \rightarrow $b = 1$

vertical shift up 2 units

a) $y = \sin(x - \frac{\pi}{2}) + 2$

horizontal shift $\frac{\pi}{2}$ units
right

b) $y = -\cos(x) + 2$

reflect over x-axis