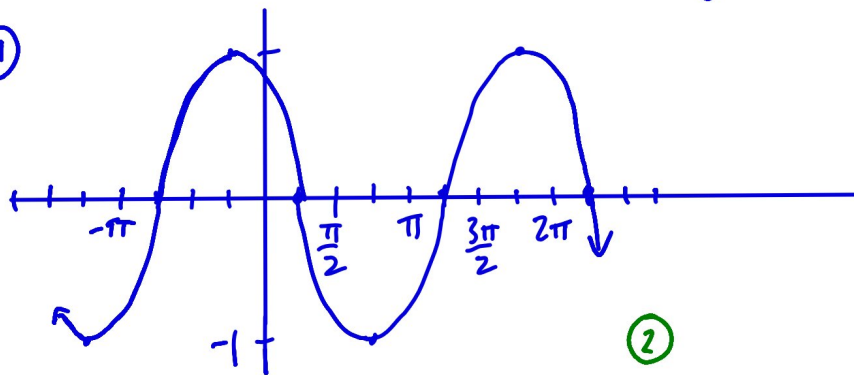


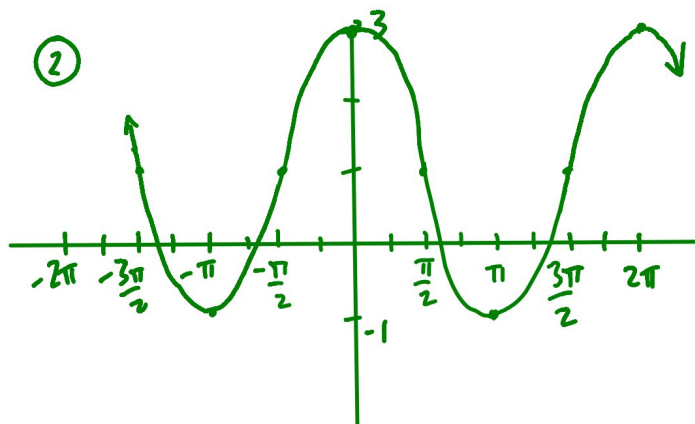
WARMUP

Find a sine and a cosine equation for each graph.

①



②



Graph 2 periods, showing transformations of Key Points

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

Sine:

Cosine:

$(0, 0)$

$(0, 1)$

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

$(\frac{\pi}{2}, 1)$

$(\frac{\pi}{2}, 0)$

$(\pi, 0)$

$(\pi, -1)$

3) $y = \cos(x + \frac{\pi}{6})$

$(\frac{3\pi}{2}, -1)$

$(\frac{3\pi}{2}, 0)$

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

$(2\pi, 0)$

$(2\pi, 1)$

$$\frac{3}{3} \cdot \frac{3\pi}{2} - \frac{\pi}{6} = \frac{9\pi}{6} - \frac{\pi}{6} = \frac{8\pi}{6} = \frac{4\pi}{3}$$

②

$(0, 0) \rightarrow (-\frac{\pi}{2}, -3)$

$(\frac{\pi}{2}, 1) \rightarrow (0, -2)$

$(\pi, 0) \rightarrow (\frac{\pi}{2}, -3)$

$(\frac{3\pi}{2}, -1) \rightarrow (\pi, -4)$

$(2\pi, 0) \rightarrow (\frac{3\pi}{2}, -3)$

