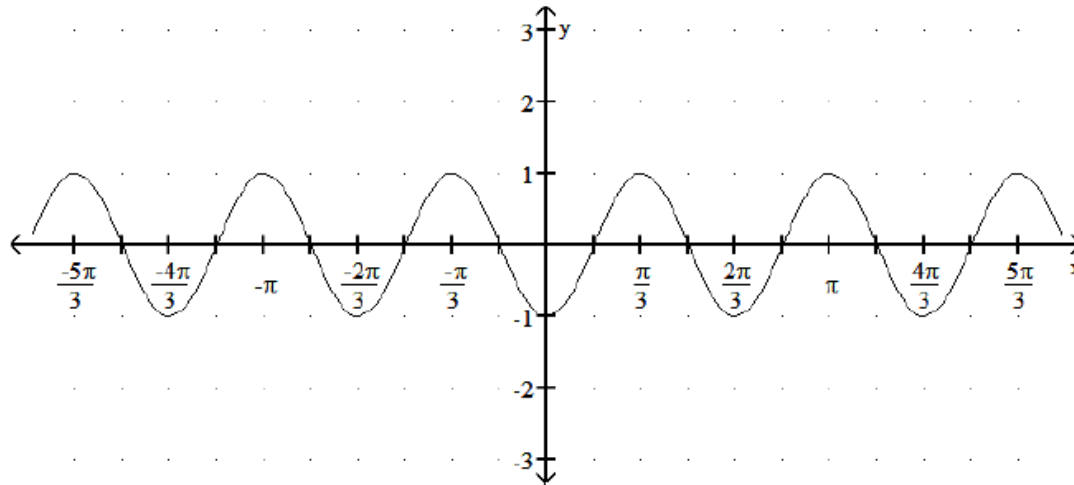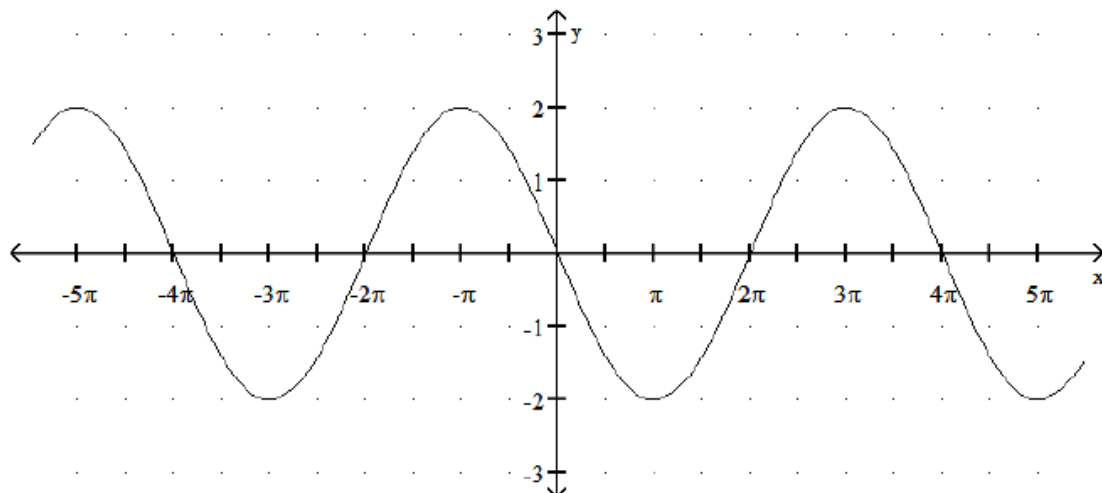For the following curves, **assume there has been no reflection**. Please identify the a-value, d-value, fundamental period, b-value, and phase shift if the curve is sine and phase shift if the curve is cosine. Use this information to write both a sine and cosine equation for each curve.
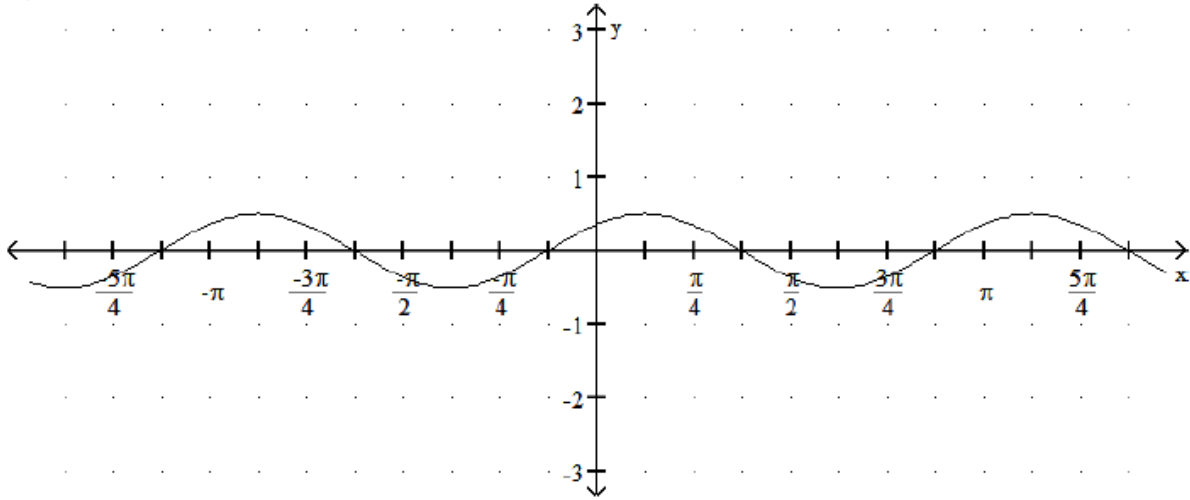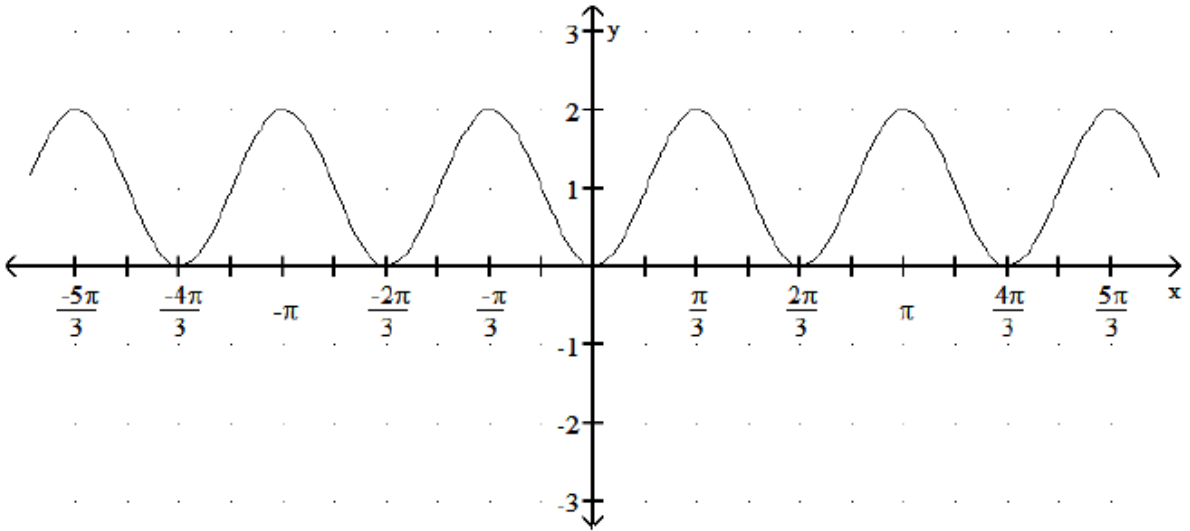
1.



2.

3.



4.

**Answer Key:**

1. Some Possible Equations : $y = \cos(3x - \pi)$, $y = \cos(3x + \pi)$

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

2. Some Possible Equations : $y = 2\cos\left(\dfrac{1}{2}x + \dfrac{\pi}{2}\right)$, $y = 2\cos\left(\dfrac{1}{2}x - \dfrac{3\pi}{2}\right)$

$y = 2\sin\left(\dfrac{1}{2}x - \pi\right)$, $y = 2\sin\left(\dfrac{1}{2}x + \pi\right)$

3. Some Possible Equations : $y = \dfrac{1}{2}\cos\left(2x - \dfrac{\pi}{4}\right)$, $y = \dfrac{1}{2}\cos\left(2x - \dfrac{9\pi}{4}\right)$

$y = \dfrac{1}{2}\sin\left(2x + \dfrac{\pi}{4}\right)$, $y = \dfrac{1}{2}\sin\left(2x - \dfrac{7\pi}{4}\right)$

4. Some Possible Equations: $y = \cos(3x - \pi) + 1$, $y = \cos(3x + \pi) + 1$

$y = \sin\left(3x - \dfrac{\pi}{2}\right) + 1$, $y = \sin\left(3x + \dfrac{3\pi}{2}\right) + 1$