Answer Key

For each of the following graphs, give an equation for sine and one for cosine:

$$y = 4\sin(a\theta)$$

and

$$y = 4\cos(2\theta - \frac{\pi}{2})$$

Answer Key

For each of the following graphs, give an equation for sine and one for cosine:

$$y = 4\cos(a\theta + \frac{3\pi}{2})$$
For each of the following graphs, give an equation for sine and one for cosine:

$$y = -4 \cos(2\theta + \frac{\pi}{2})$$

For each of the following graphs, give an equation for sine and one for cosine:

$$y = -4 \sin(2\theta + \pi)$$
Amplitude: 5
Period: $\frac{\pi}{2}$
Midline $y = -2$

$\text{Sine}$
- Phase shift $\frac{\pi}{4}$

$\text{Cosine}$
- Phase shift $-\frac{\pi}{8}$

$y = 5\sin(4\theta - \pi) - 2$
$y = 5\cos(4\theta + \frac{3\pi}{2}) - 2$
#2
\(-\sin \theta \text{ (no shift)}\) \quad y = -5\sin(4\theta) - 2

A = 5
mid \ y = -2
P: \ \frac{\pi}{4}

#2
\(-\cos \theta \text{ (right } \frac{\pi}{8})\) \quad y = -5\cos(4\theta - \frac{\pi}{2}) - 2
Answer Key (page 2)

Amp 6
Period $\frac{2\pi}{3}$
Mid. $y = 0$

- Sine ($-\frac{\pi}{6}$ phase shift)
  \[ y = 6 \sin(3\theta + \frac{\pi}{6}) \]

- Cosine (no phase shift)
  \[ y = 6 \cos(3\theta) \]

Answer Key (page 2)

- Cosine ($-\frac{2\pi}{3}$ phase shift)
  \[ y = 6 \cos(3\theta + 2\pi) \]
Answer Key (page 2)

3. \(-\sin \theta (\text{shift left} \ -\frac{\pi}{2})\)
\[ y = -6 \sin(3\theta + \frac{3\pi}{2}) \]
\[ \frac{-\pi}{2} = -\frac{\pi}{3} \]
\[ -2C = -3\pi \]
\[ C = \frac{3\pi}{2} \]

Answer Key (page 2)

3. \(-\cos \theta (\text{shift left} \ -\frac{\pi}{3})\)
\[ y = -6 \cos(3\theta + \pi) \]
\[ \frac{-\pi}{3} = -\frac{\pi}{3} \]
\[ -\pi = -C \]
\[ \pi = C \]
#4

\[ y = 4 \sin \left( \frac{1}{2} \theta - \frac{\pi}{4} \right) + 1 \]

\[ y = 4 \cos \left( \frac{1}{2} \theta + \frac{5\pi}{4} \right) + 1 \]

Amp 4
Mid \( y = 1 \)
Period \( 4\pi \)

#4

\[ y = 4 \sin \left( \frac{1}{2} \theta + \frac{7\pi}{4} \right) + 1 \]

\[ y = 4 \cos \left( \frac{1}{2} \theta - \frac{3\pi}{4} \right) + 1 \]
Answer Key (page 2)

4

-\cos\theta \text{ (shift left } \frac{\pi}{2} \text{)}

\[ y = -6 \cos \left( \frac{1}{2} \theta + \frac{\pi}{4} \right) + 1 \]

-4 = -C

\frac{\pi}{4} = -C

\frac{3\pi}{4} = C

-4 \sin \left( \frac{1}{2} \theta + \frac{3\pi}{4} \right) + 1

-4 = -C

\frac{3\pi}{4} = C

Midline

\[ y = 1 \]