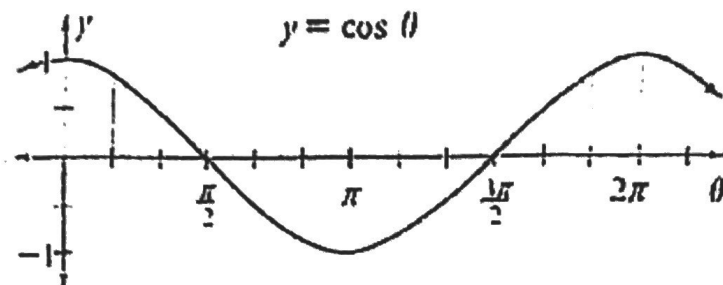


Name: Key Hour: _____ Date: _____

Graphing Cosine (One Cycle) Notes



- Equation: $y = a \cos b\theta$ θ is in radians
 $a \neq 0$ $b > 0$

- $|a|$ = amplitude

- b = # of cycles between 0 and 2π

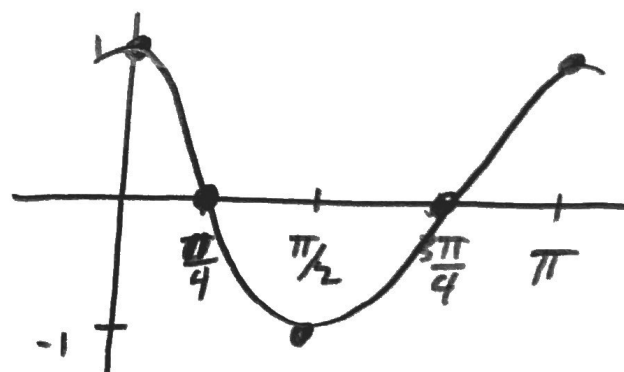
- Period = $\frac{2\pi}{b}$

Many of the steps for graphing and key features are similar to those of the sine function!

Examples: Sketch one cycle of the following functions.

1) $y = \cos(2\theta)$

$a = 1$	θ	y
$b = 2$	$0 (\pi) = 0$	1
Period	$\frac{1}{4}(\pi) = \pi/4$	0
$\frac{2\pi}{b}$	$\frac{1}{2}(\pi) = \pi/2$	-1
$= \frac{2\pi}{2}$	$\frac{3}{4}(\pi) = 3\pi/4$	0
$= \pi$	$1(\pi) = \pi$	1



$$2) y = -2\cos\theta$$

$$a = -2$$

$$b = 1$$

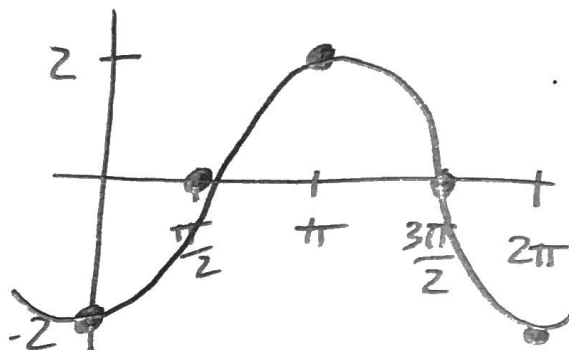
Period:

$$\frac{2\pi}{b}$$

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

$$= 2\pi$$

θ	y
$0 (2\pi) = 0$	-2
$\frac{1}{4} (2\pi) = \frac{2\pi}{4} = \frac{\pi}{2}$	0
$\frac{1}{2} (2\pi) = \frac{2\pi}{2} = \pi$	2
$\frac{3}{4} (2\pi) = \frac{6\pi}{4} = \frac{3\pi}{2}$	0
$1 (2\pi) = 2\pi$	-2



$$3) y = 3\cos\left(\frac{2}{3}\theta\right)$$

$$a = 3$$

$$b = \frac{2}{3}$$

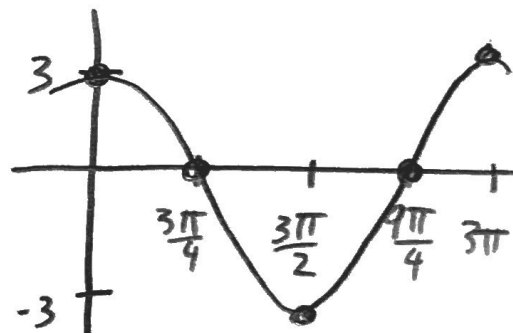
Period

$$\frac{2\pi}{b}$$

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

$$= \frac{6\pi}{2} = 3\pi$$

θ	y
$0 (3\pi) = 0$	3
$\frac{1}{4} (3\pi) = \frac{3\pi}{4}$	0
$\frac{1}{2} (3\pi) = \frac{3\pi}{2}$	-3
$\frac{3}{4} (3\pi) = \frac{9\pi}{4}$	0
$1 (3\pi) = 3\pi$	3



$$4) y = -6\cos(3\pi\theta)$$

$$a = -6$$

$$b = 3\pi$$

Period

$$\frac{2\pi}{b}$$

$$\frac{2\pi}{3\pi}$$

$$= \frac{2}{3}$$

θ	y
$0 (\frac{2}{3}) = 0$	-6
$\frac{1}{4} (\frac{2}{3}) = \frac{2}{12} = \frac{1}{6}$	0
$\frac{1}{2} (\frac{2}{3}) = \frac{2}{6} = \frac{1}{3}$	6
$\frac{3}{4} (\frac{2}{3}) = \frac{6}{12} = \frac{1}{2}$	0
$1 (\frac{2}{3}) = \frac{2}{3}$	-6

