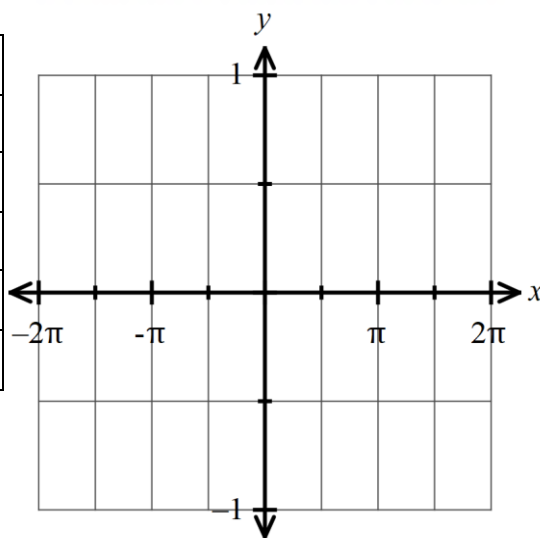


Name of Graph: _____

Equation: _____

x	$f(x)$



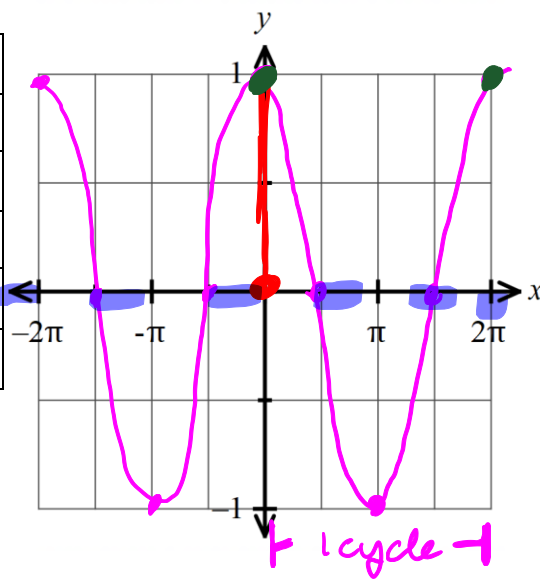
Key Features

- Domain:
- Range:
- x -intercept(s):
- y -intercept:
- Increasing:
- Decreasing:
- Constant:
- Amplitude:
- Period:
- Positive:
- Negative:
- Maximums /Minimums
- Symmetry:
- End Behavior:
 - $\lim_{x \rightarrow -\infty} f(x) =$
 - $\lim_{x \rightarrow \infty} f(x) =$
- Vertical Shift:
- Phase Shift:

Name of Graph: Cosine

Equation: $y = \cos \theta$ $f(\theta) = \cos \theta$

x	$f(x)$
0	1
$\pi/2$	0
π	-1
$3\pi/2$	0
2π	1



Key Features

- Domain: $(-\infty, \infty)$
- Range: $[-1, 1]$
- x -intercept(s): $x = \frac{\pi}{2} + \pi k$
- y -intercept: $(0, 1)$
- Increasing: *periodic*
- Decreasing: *periodic*
- Constant: *N/A*
- Amplitude: **1**
- Period: **2π**
- Positive: *periodic*
- Negative: *periodic*
- Maximums /Minimums: *absolute*
- Symmetry: *even*
- End Behavior:
 - $\lim_{x \rightarrow -\infty} f(x) = \text{N/A}$
 - $\lim_{x \rightarrow \infty} f(x) = \text{N/A}$
- Vertical Shift: **0 (midline)** $y=0$
- Phase Shift: **0**

1 cycle = 1 complete wave

Steps for solving cosine equation:

- ① get cosine by itself
- ② find quadrants to use
 $\frac{S}{T} \mid \frac{A}{C}$ & draw triangles if needed

- ③ find reference angle
 - unit circle
 - use calc & do inverse

- ④ find the angles in standard position $\pm 180^\circ$ -360°
 $\pm \pi$ -2π

Steps for solving cosine equation:

ex. 1

$$6 - 4 \cos \theta = 8$$
$$-4 \cos \theta = 2$$
$$\cos \theta = -\frac{1}{2}$$
$$\theta = 120^\circ, 240^\circ$$
$$\theta = \frac{2\pi}{3}, \frac{4\pi}{3}$$

~~$\cos^{-1}(-\frac{1}{2}) = \theta$~~

$\cos^{-1}(-\frac{1}{2}) = \theta$
ref $\angle = 60^\circ$