

Chapter 8
Section 2 notes

Reminder:

$$A = \frac{\text{max} - \text{min}}{2}$$

SINE AND COSINE CURVES

Remember...
cf(x) vertical stretch/shrink
f(cx) horizontal stretch/shrink

Graph $y = \sin x$

$P = 360^\circ$ $A = 1$

$y = 2\sin x$
(2·y)

$P = 360^\circ$ $A = 2$

Graph is based on the unit circle:

At 0° , $y = 0$

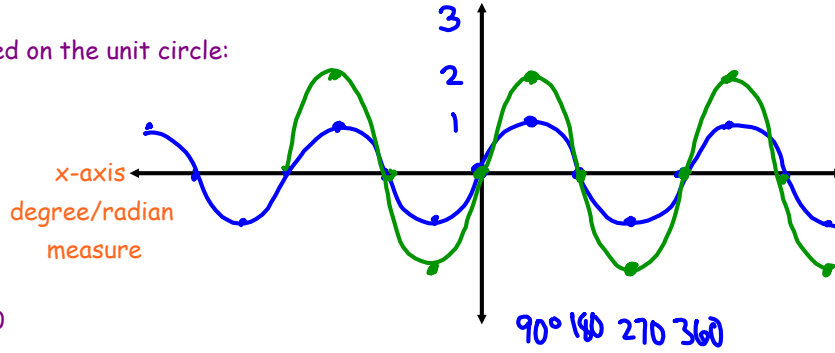
$(0^\circ, 0)$

At 90° , $y = 1$

$(90^\circ, 1)$

At 180° , $y = 0$

$(180^\circ, 0)$



Remember...
cf(x) vertical stretch/shrink
f(cx) horizontal stretch/shrink

$(-\frac{1}{2} \cdot y)$

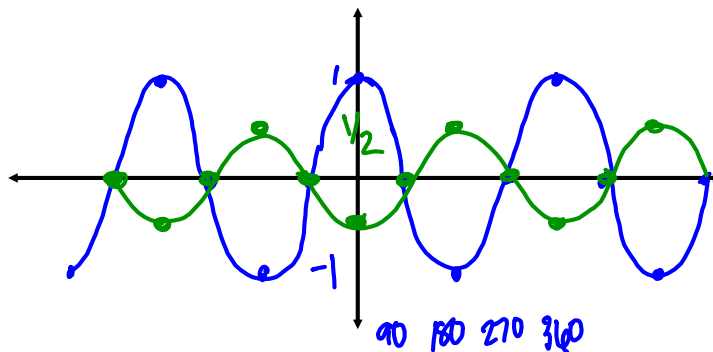
shrink
reflect x-axis

Graph $y = \cos x$

$P = 360^\circ$ $A = 1$

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

$P = 360^\circ$ $A = \frac{1}{2}$



Remember...

$c f(x)$ vertical stretch/shrink

changes A

$f(cx)$ horizontal stretch/shrink

changes P

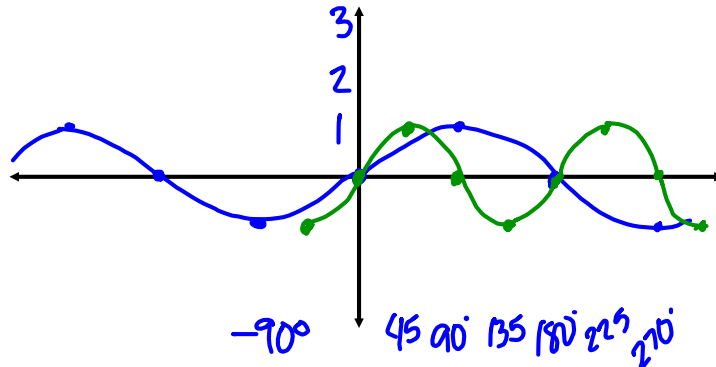
Graph $y = \sin x$

$y = \sin 2x$

$P = 360^\circ$ $A = 1$

$P = 180^\circ$ $A = 1$

- $(-90^\circ, -1)$
- $(0^\circ, 0)$
- $(90^\circ, 1)$
- $(180^\circ, 0)$
- $(270^\circ, -1)$



- $(\frac{x}{2}, y)$
- $(-45^\circ, -1)$
- $(0^\circ, 0)$
- $(45^\circ, 1)$
- $(90^\circ, 0)$
- $(135^\circ, -1)$

Period and Amplitude

$y = A \sin(Bx)$ $A \neq 0$

Amplitude = $|A|$

$y = A \cos(Bx)$ $B > 0$

Period = $\frac{2\pi}{B}$ or $\frac{360^\circ}{B}$

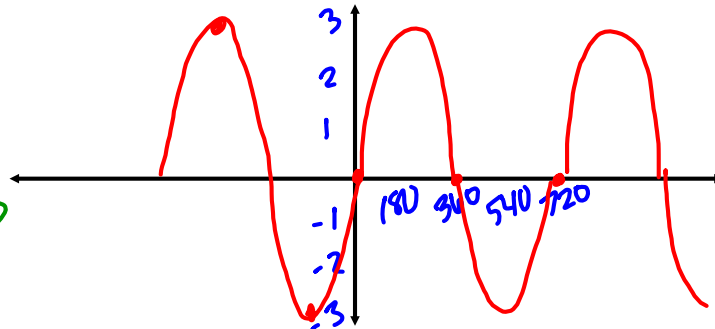
Example

Find the period and amplitude. Sketch at least one period.

$y = 3 \sin(\frac{1}{2}x)$

$|3| = 3 = A$

$\frac{360^\circ}{\frac{1}{2}} = 720^\circ = P$



Example

Write the equation of the trig function being described.

A sine curve varies between 3 and -3 with a period of $\frac{\pi}{6}$.

$$y = A \sin(Bx)$$

$$A = \frac{3 - (-3)}{2}$$

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

$$y = \pm 3 \sin(12x)$$

$$P = \frac{2\pi}{B}$$

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

$$\frac{12\pi}{\pi} = \frac{B\pi}{\pi}$$

$$B = 12$$

Homework

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odds or all, you decide :-)