

Wednesday, March 20, 2019

$$\begin{aligned} 36 + b^2 &= 100 \\ -36 & \quad -36 \\ \hline \sqrt{b^2} &= \sqrt{64} \\ b &= 8 \end{aligned}$$

$$\frac{\cdot}{\cdot}$$

$$\begin{aligned} a^2 + b^2 &= c^2 \\ 6^2 + b^2 &= 10^2 \end{aligned}$$

- Warm-up

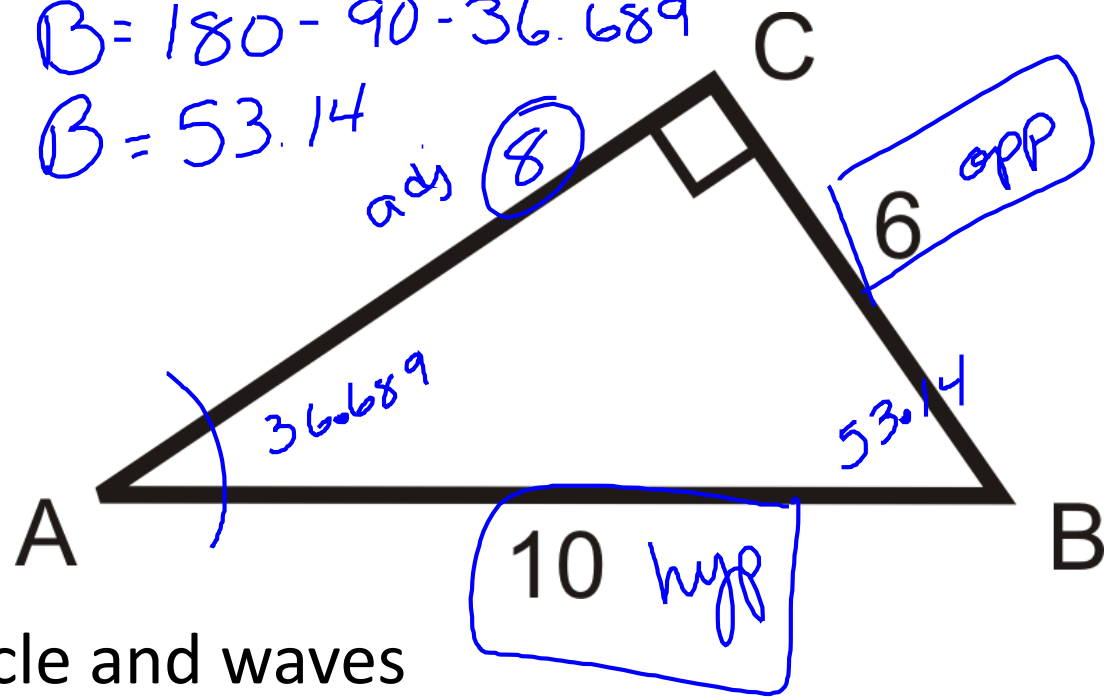
- Calculate all missing angles and sides of the right triangle

\sin^{-1}
 $(\sin A) = \left(\frac{6}{10}\right)$

$A = 36.689^\circ$

$B = 180 - 90 - 36.689$

$B = 53.14$



- More with unit circle and waves

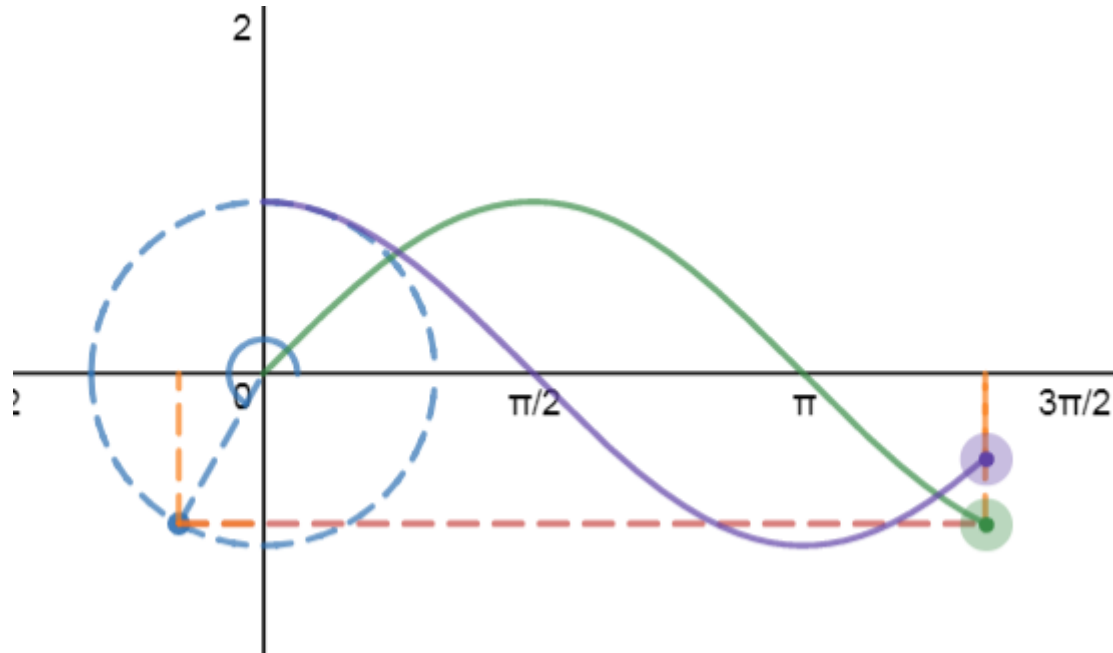
Objectives

Content: I will understand the shape and critical features of **sine** and **cosine waves**.

Social: I will listen well and discuss my uncertainties with my group members.

Language: I will clearly compare and contrast the critical features of **sine** and **cosine waves**.

Trig Makes Waves – look again



Objectives

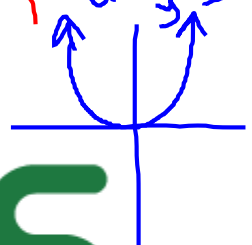
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9HUMJS

Domain: all real
Range: all positive $y \geq 0$



Student.desmos.com

desmos

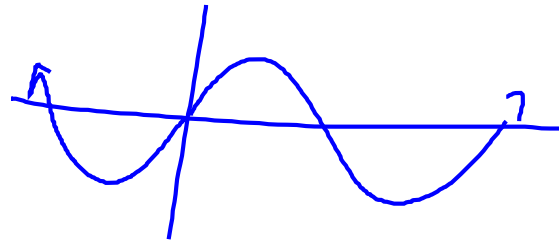
9HUMJS

Domain

x's that have values

Range

y's that have values



Critical points of waves



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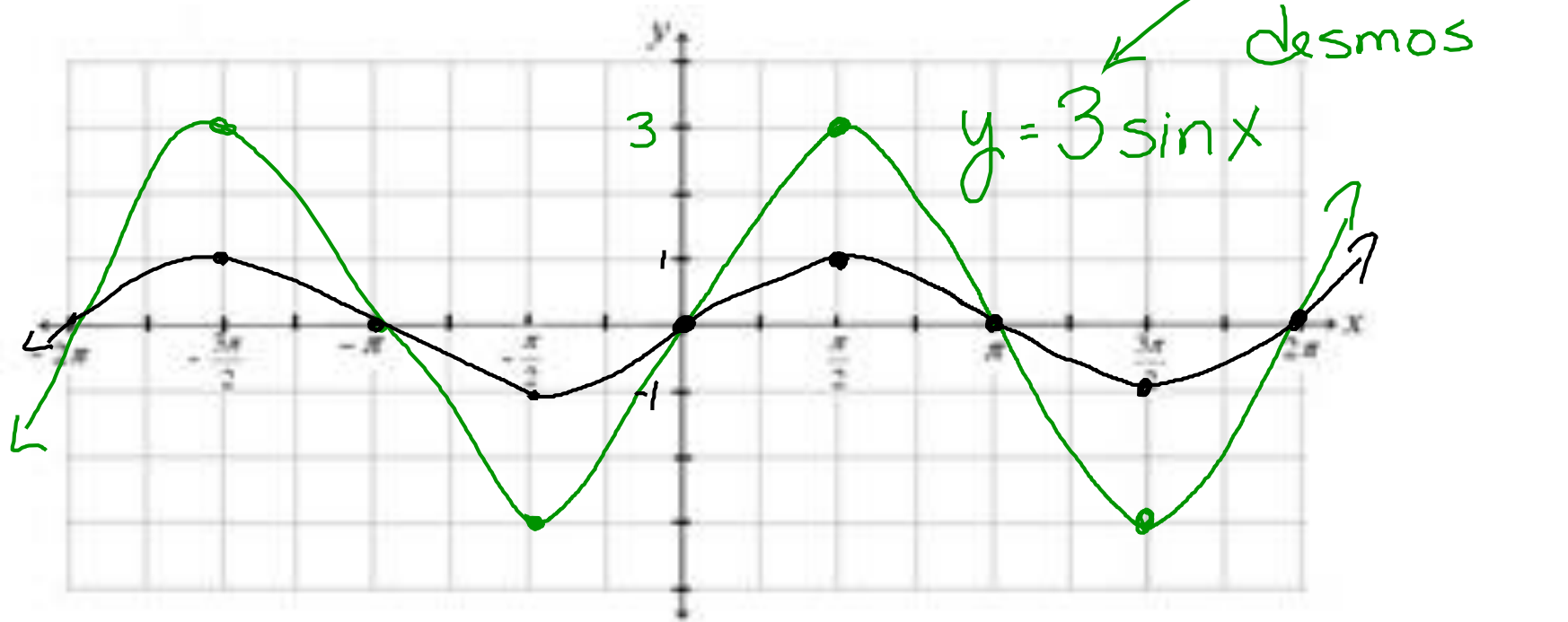
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How can waves change...

Sine

- **Amplitude** — increases (decreases) range
- Period
- Vertical Shift
- Horizontal Shift



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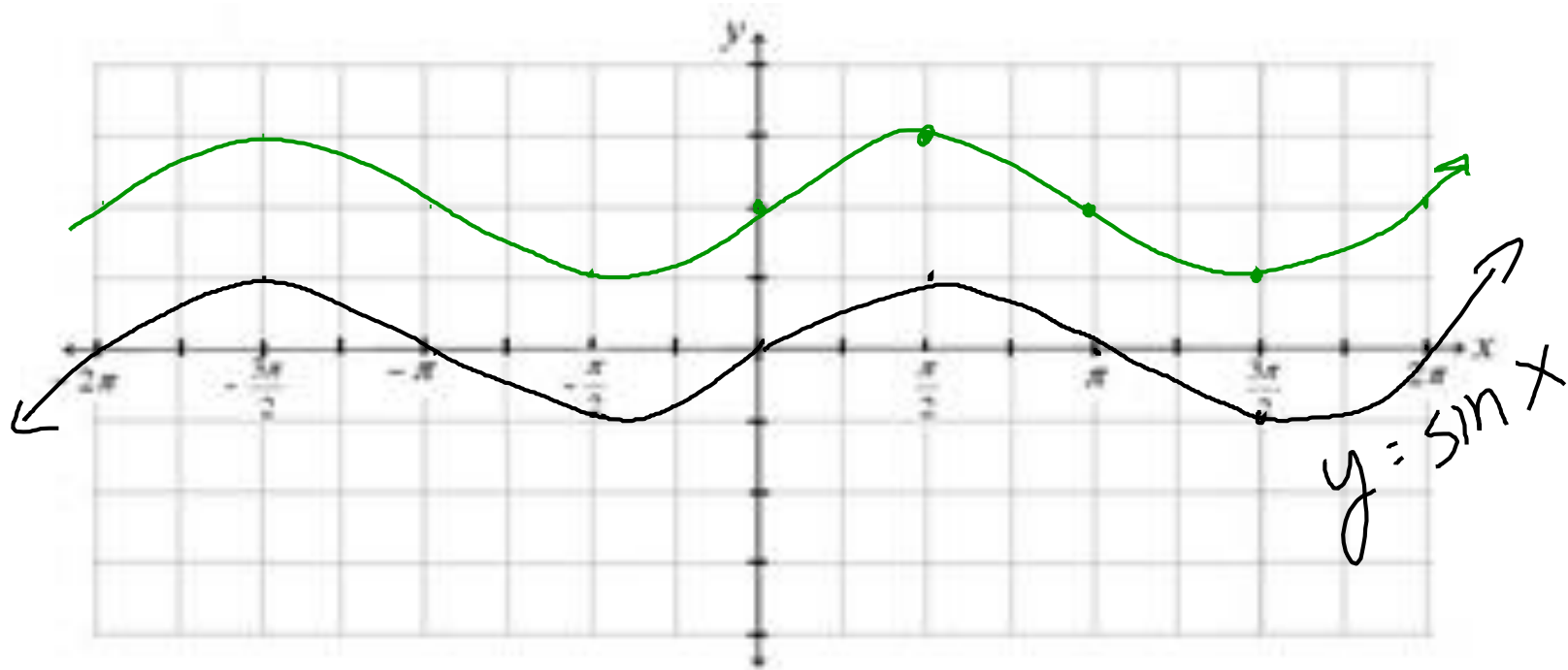
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How can waves change...

- Amplitude
- Period

- Vertical Shift
- Horizontal Shift

$y = \sin x + 2$



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How can waves change...

- Amplitude
- Period

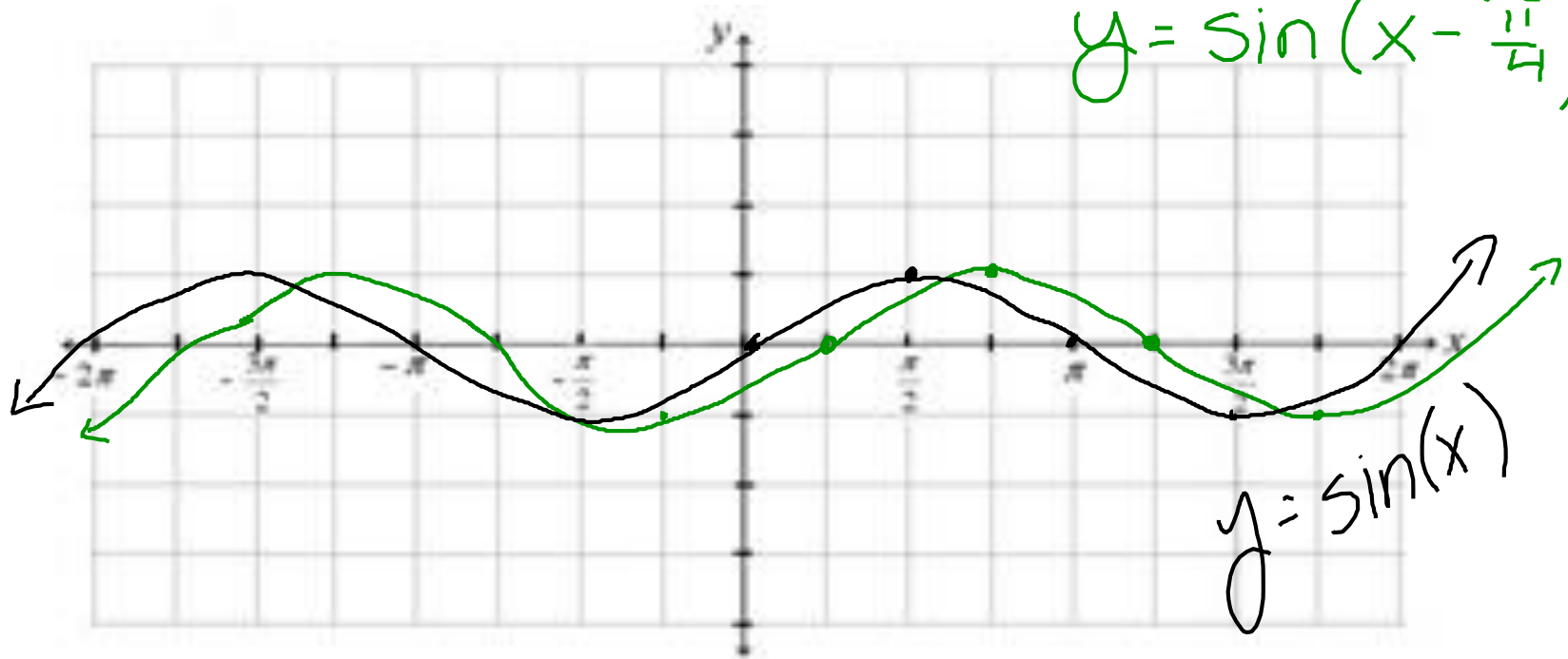
- Vertical Shift

- **Horizontal Shift**

*inside ()
but backwards*

$$+ \frac{\pi}{4}$$

$$y = \sin\left(x - \frac{\pi}{4}\right)$$



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How can waves change...

- Amplitude

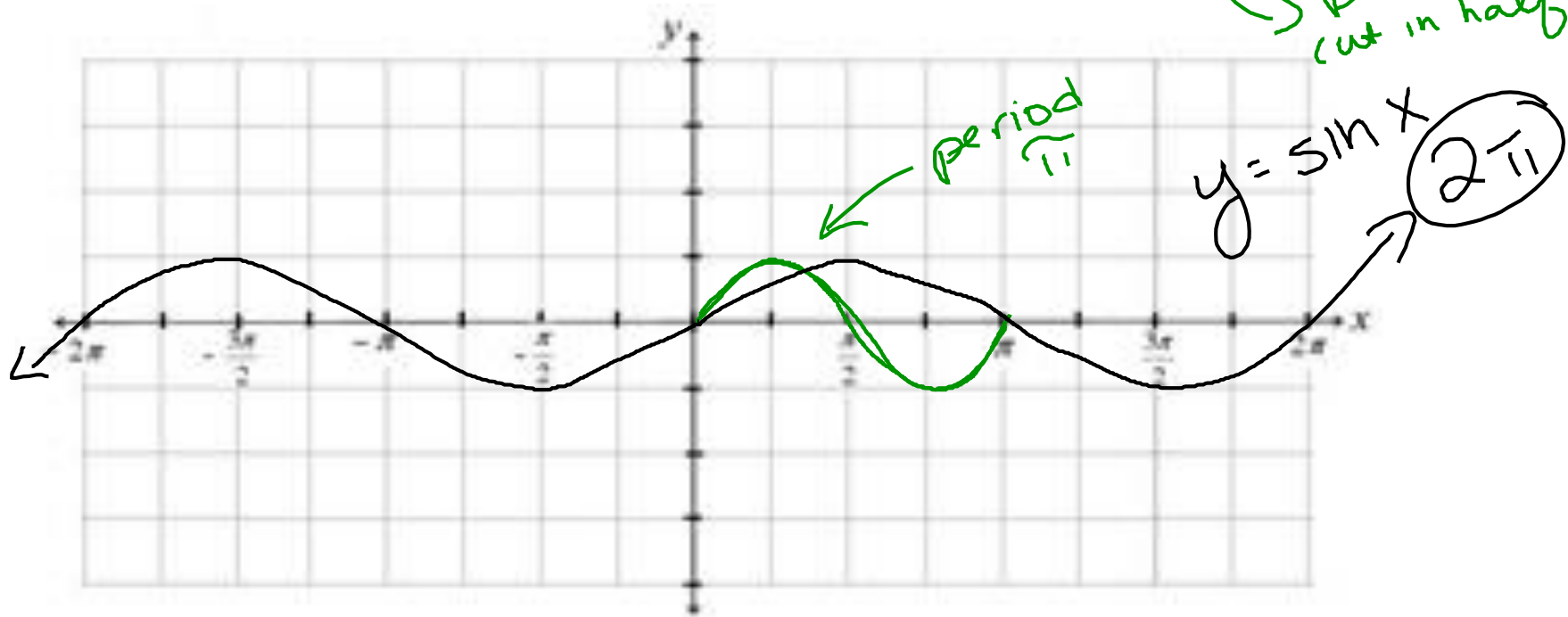
- **Period**

time it takes to complete a cycle

- Vertical Shift

- Horizontal Shift

$2x$'s "faster"
 $y = \sin(2x)$
Period gets cut in half



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Homework Questions

(T) $\sqrt{9x^2}$
3 3 $x \cdot x$
 $3x$

(H) $\sqrt{12x^2}$ $2x\sqrt{3}$
2 6 $x \cdot x$
2 3

(S) $\sqrt{18a^6b^2}$ $3a^3b\sqrt{2}$
6 3
2 3
a a a a a a
b b

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