

4.4 Graphs of Sine and Cosine

Feb 3-1:16 PM

Write an equation

1. period  $2\pi$   
 $\frac{2\pi}{b} = 2\pi$   
 $b = 1$
2. midline  $k = 2$
3.  $a = 3$
4. sin/cos check reflection

$f(x) = a \sin bx + k$   
 $f(x) = -3 \sin x + 2$

$a = 3$   
 $b = 1$   
 $k = 2$   
reflection

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1. period  $\pi$   
find  $b$
2. midline  $k$
3. amplitude  $a$
4. sin/cos reflected?

$f(x) = \cos(2x) - 4$

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

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

$$2 = b$$

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Phase Shift: a horizontal shift of a trig function

$f(x) = a \sin b(x-h) + k$

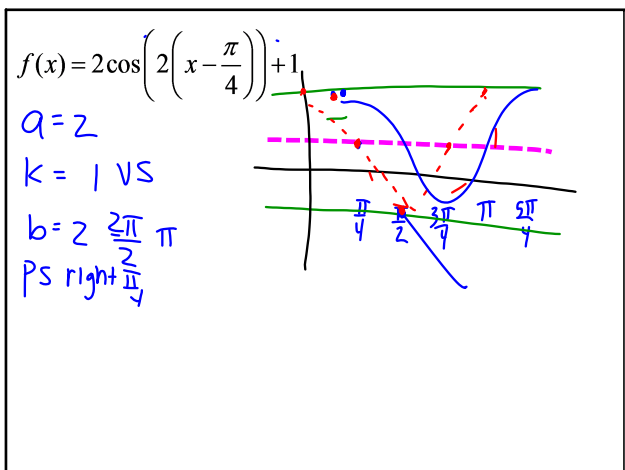
- right  
+ left

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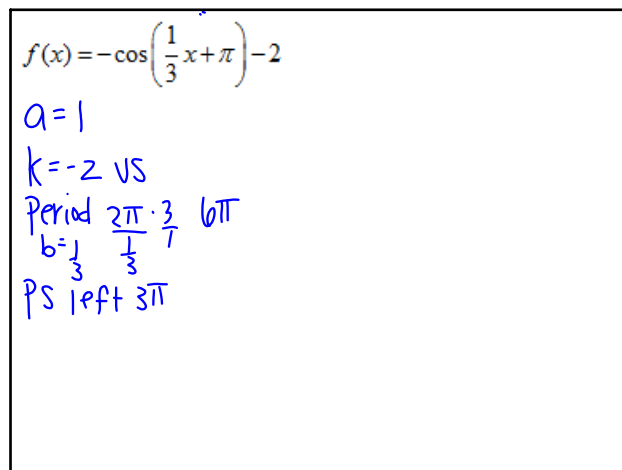
$f(x) = \sin\left(x - \frac{\pi}{2}\right) + 3$

$a = 1$   
 $p = b \cdot 2\pi$   
 $PS = h$  right  $\frac{\pi}{2}$   
 $VS = k$  3

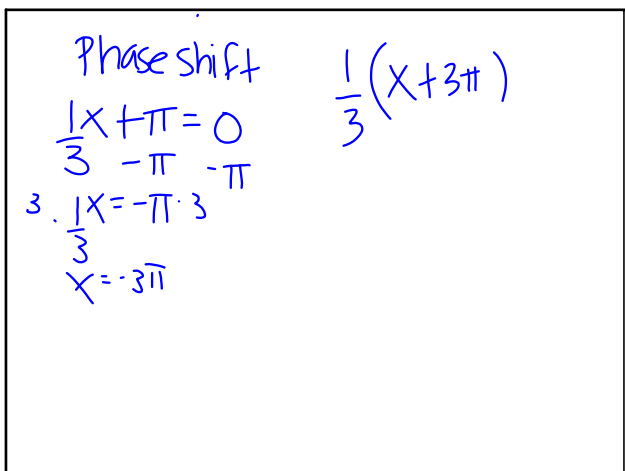
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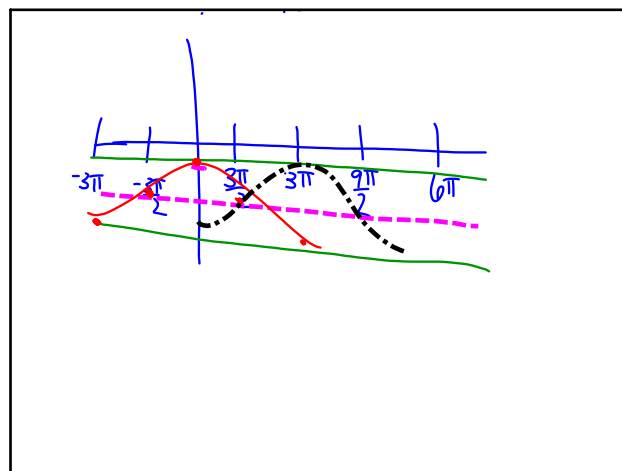
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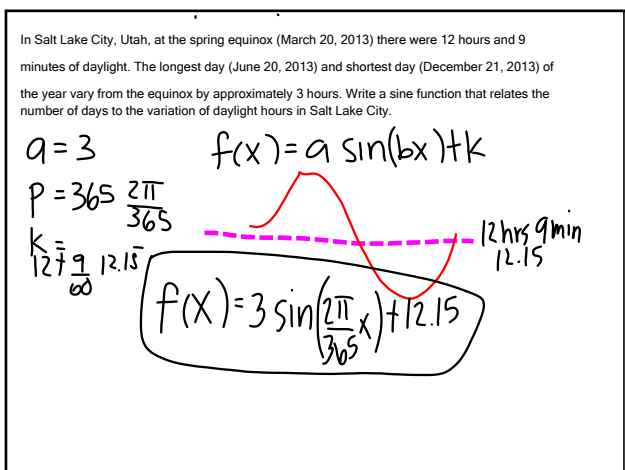
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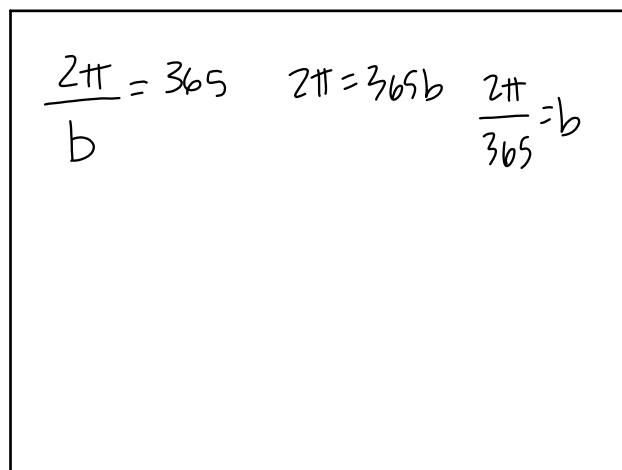
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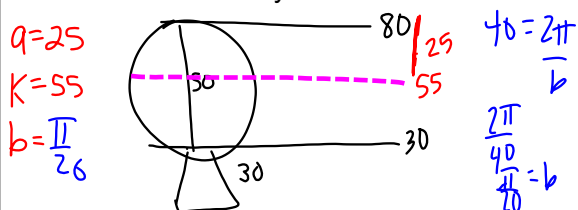


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26. A ferris wheel 50 ft in diameter makes one revolution every 40 seconds. The center of the wheel is 30 feet above the ground. Write a cosine function to model the height of a car of the ferris wheel at any time  $t$ .



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reflection  
get on ferris wheel  
at min

$$f(x) = -25 \cos\left(\frac{\pi x}{20}\right) + 55$$

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4.4 w.s. due tue 2/7/17  
at the end class

Feb 3-2:07 PM