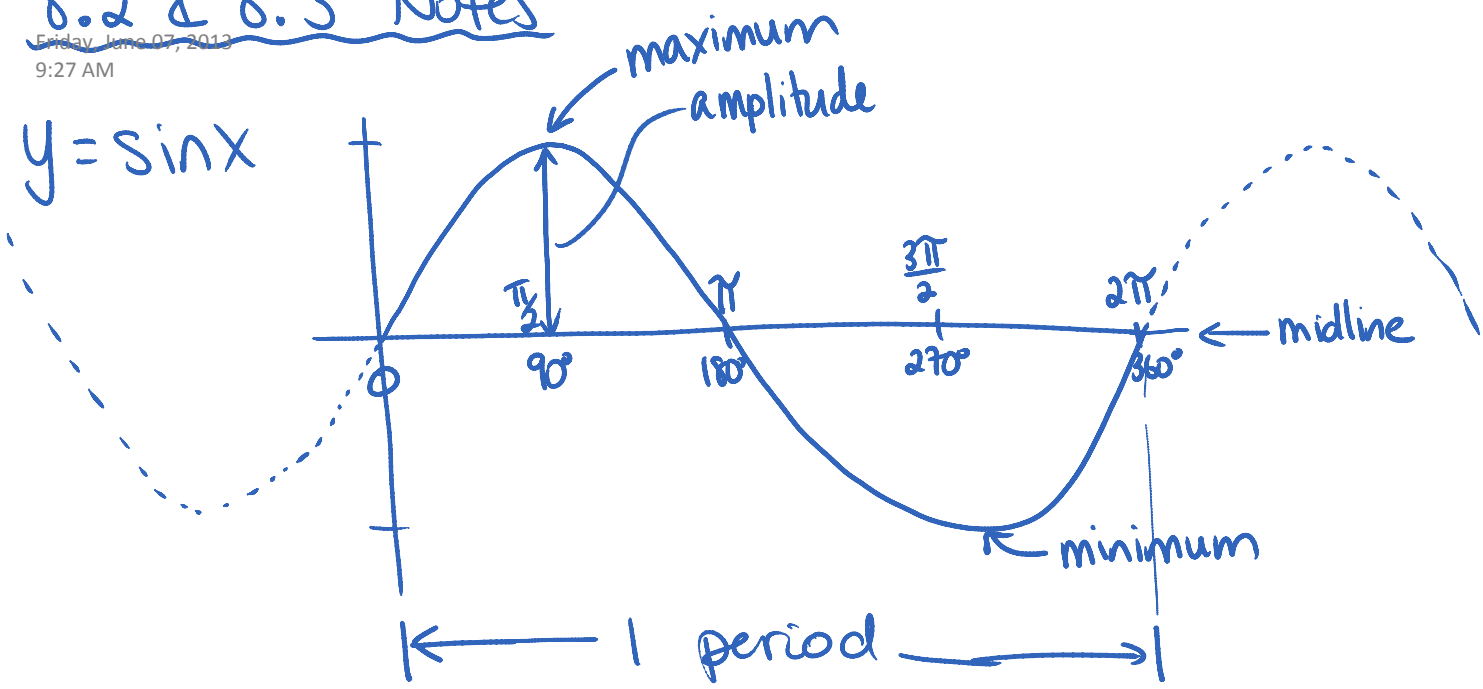
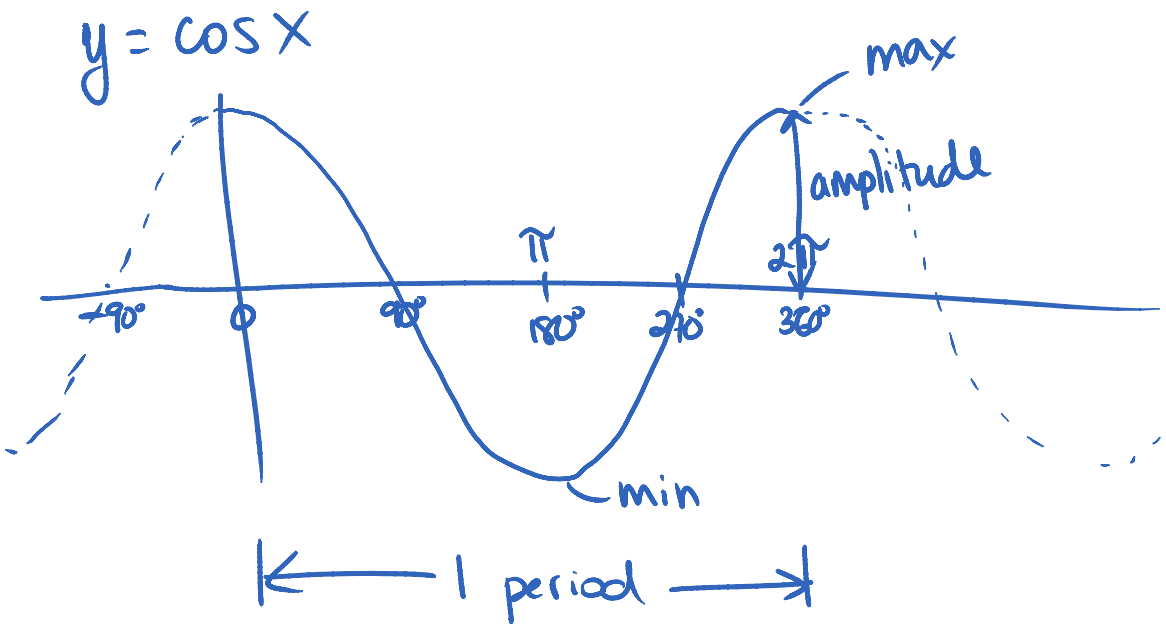
8.2 & 8.3 Notes

Friday, June 07, 2013
9:27 AM



eqⁿ of midline: $y = \frac{max + min}{2}$

amplitude: $a = \frac{max - min}{2}$



§8.4

More precise eqⁿ

$$y = a\sin b(x-c) + d$$

or

$$y = a\cos b(x-c) + d$$

a = amplitude $\quad a = \frac{\max - \min}{2}$

$b \rightarrow$ period $\quad$ period $= \frac{360^\circ}{b}$ or period $= \frac{2\pi}{b}$

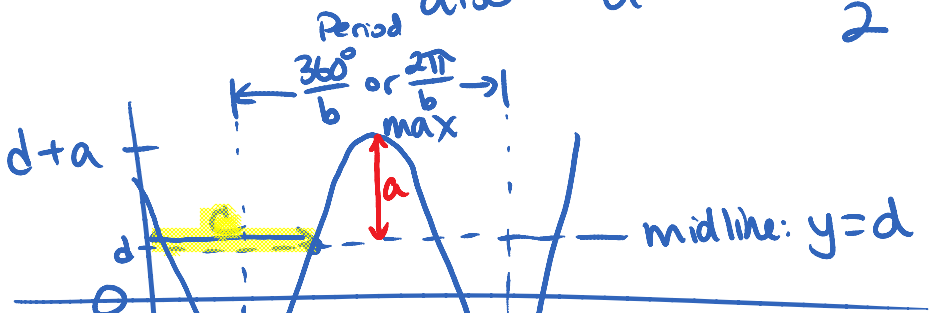
↑ use this one if any #'s in eqⁿ (or on x-axis) are in degrees.

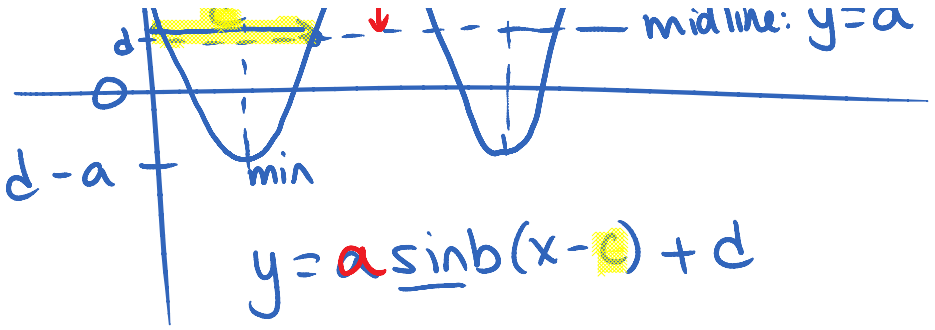
c = horizontal shift $\quad x-c \rightarrow$ shift to right

$x-(-c) = x+c \rightarrow$ shift to left

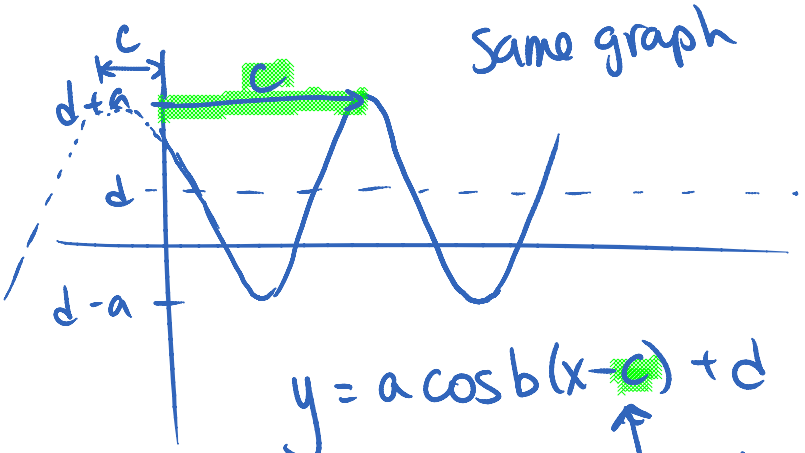
d: midline $\quad y = d$

also $d = \frac{\max + \min}{2}$





$y = a \sin b(x - c) + d$

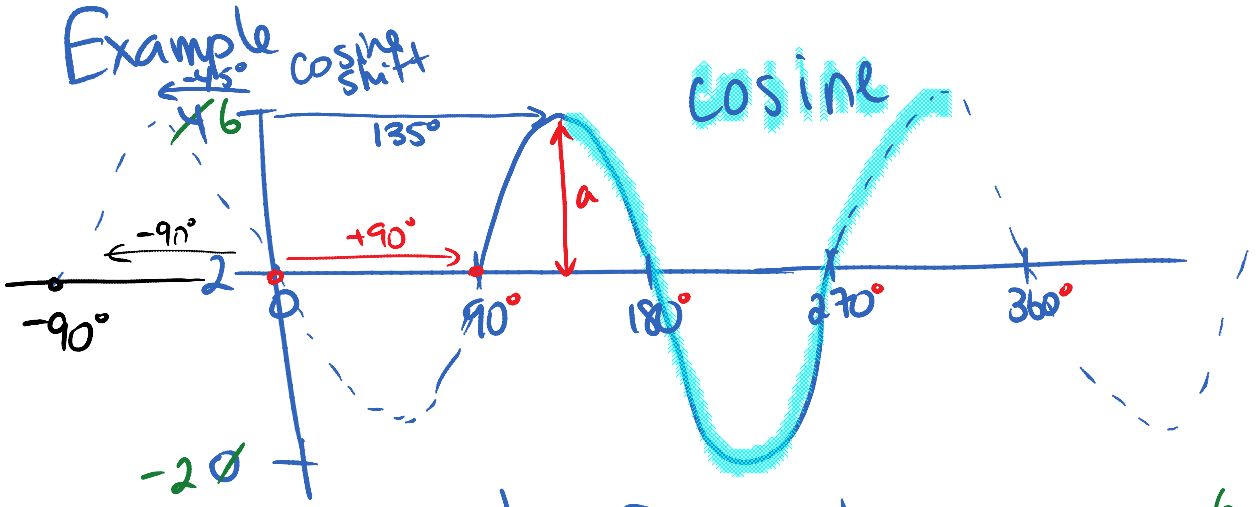


same graph

$y = a \cos b(x - c) + d$

c will be diff for cosine than sine.

Example



Start w equation for this part.

$y = a \sin b(x - c) + d$

$y = 2 \sin 2(x - 90°) + 2$

$a = \frac{6 - (-2)}{2} = \frac{8}{2} = 4$

$\text{period} = \frac{360°}{b}$

$b = \frac{360°}{\text{period}} = \frac{360°}{180°} = 2$

$= 4 \sin 2(x - 90°) + 2$

shift to right

period 180

$d = \frac{\max + \min}{2}$

$= \frac{6 + (-2)}{2} = 2$

$y = 4 \sin 2(x + 90°) + 2$

amp. | b | shift left | midline

$y = 4 \sin 2(x + 450°) + 2$

shift left of $90° + 360°$

using cosine instead (still the same graph)

$y = a \cos b(x - c) + d$

$y = 4 \cos 2(x - 135) + 2$

shift to right

or

$y = 4 \cos 2(x - -45) + 2$

$= 4 \cos 2(x + 45) + 2$

shift to left

many equations for one graph

Review pg 581 #1, 2, 4-9