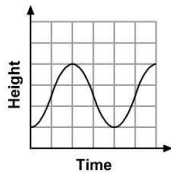
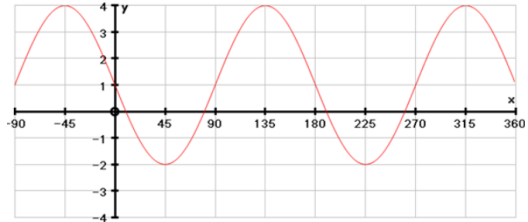


Writing Equations of Sinusoidal Functions from a Graph



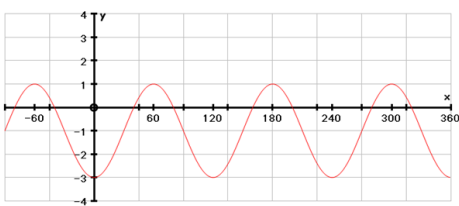
Nov 10-2:28 PM

$$\frac{1}{VS}(y-VT) = \sin \frac{1}{HS}(x-HT) \quad \frac{1}{VS}(y-VT) = \cos \frac{1}{HS}(x-HT)$$



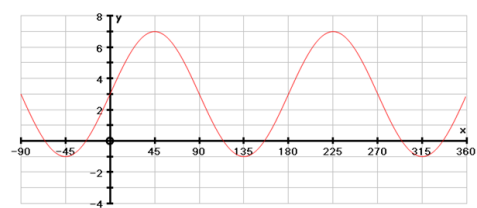
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$$\frac{1}{VS}(y-VT) = \sin \frac{1}{HS}(x-HT) \quad \frac{1}{VS}(y-VT) = \cos \frac{1}{HS}(x-HT)$$

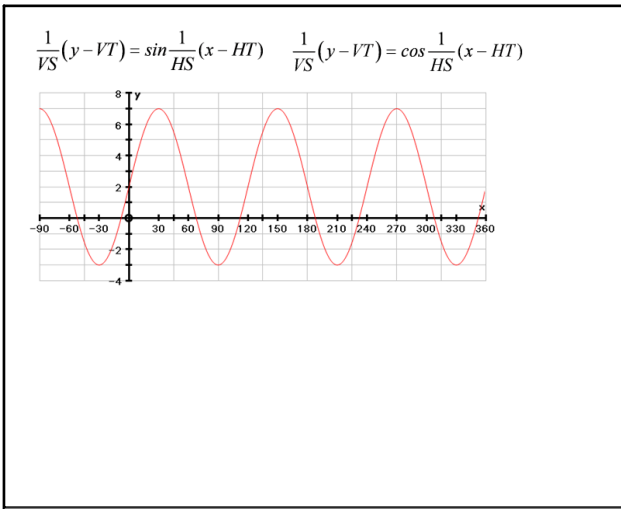


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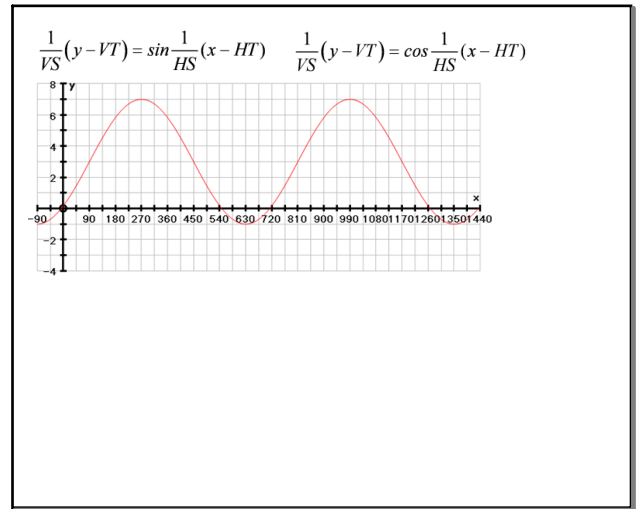
$$\frac{1}{VS}(y-VT) = \sin \frac{1}{HS}(x-HT) \quad \frac{1}{VS}(y-VT) = \cos \frac{1}{HS}(x-HT)$$



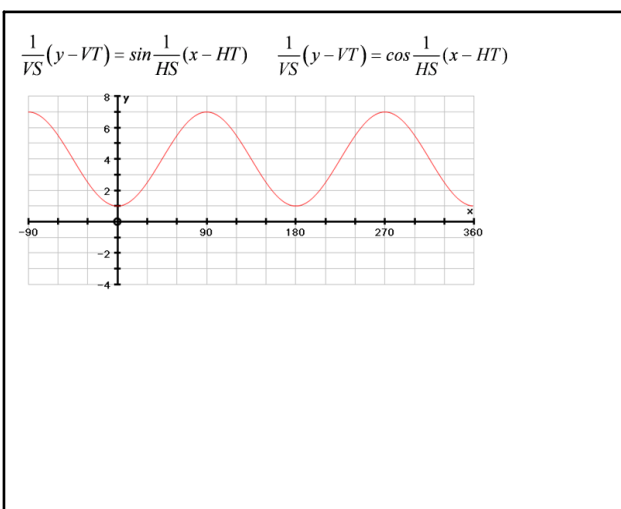
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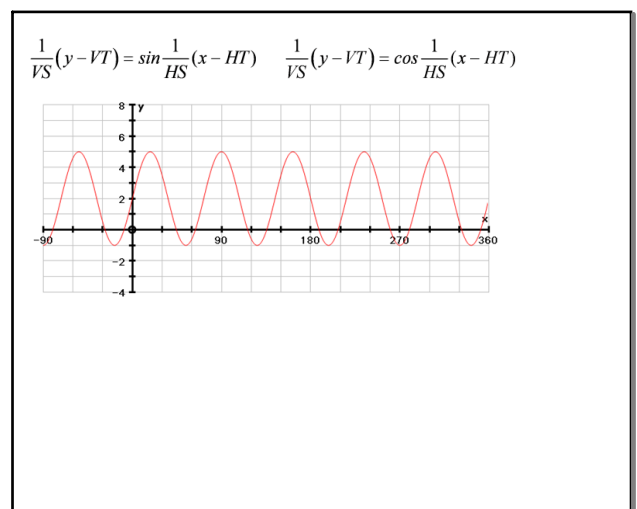
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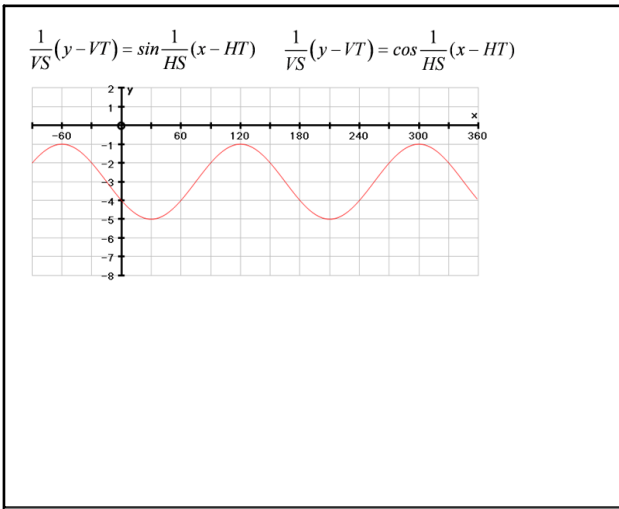
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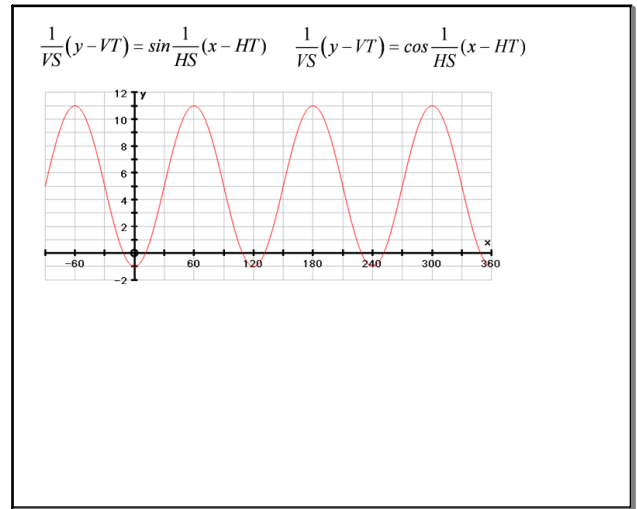
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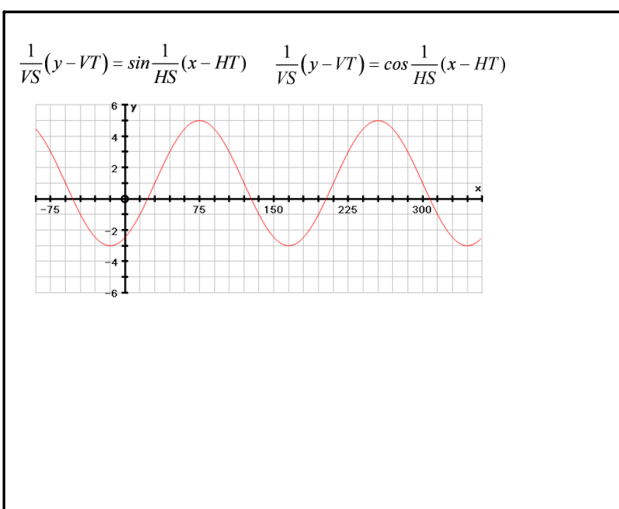
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$\frac{1}{VS}(y-VT) = \sin \frac{1}{HS}(x-HT)$ $\frac{1}{VS}(y-VT) = \cos \frac{1}{HS}(x-HT)$

$VS = \frac{MAX - MIN}{2}$
 $VT = \frac{MAX + MIN}{2}$
 $HS = \frac{Period\ length}{360}$
 $HT = \begin{matrix} \cos = \text{How much (max)} \\ \text{max moved} \\ \text{from y-axis (middle)} \\ \sin = \downarrow \frac{1}{2} \text{ way bet min \& max} \\ \text{(not max \& min)} \end{matrix}$

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$VS = \frac{MAX-MIN}{2} = \frac{1-(-3)}{2} = \frac{4}{2} = 2$
 $VT = \frac{MAX+MIN}{2} = \frac{1+(-3)}{2} = \frac{-2}{2} = -1$
 $HS = \frac{PL}{360} = \frac{90}{360} = \frac{1}{4}$
 $HT: \cos: 45^\circ$
 $\sin: 22.5^\circ$

$\frac{1}{VS}(y-VT) = \frac{\sin}{\cos} \frac{1}{HS}(x-HT)$
 $\frac{1}{2}(y+1) = \sin 4(x-22.5^\circ)$
 $\frac{1}{2}(y+1) = \cos 4(x-45^\circ)$

$y = 2 \sin(4(x-22.5^\circ)) - 1$
 $y = 2 \cos(4(x-45^\circ)) - 1$

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$\frac{1}{VS}(y-VT) = \sin \frac{1}{HS}(x-HT)$ $\frac{1}{VS}(y-VT) = \cos \frac{1}{HS}(x-HT)$

$VS = \frac{MAX-MIN}{2} = \frac{1-(-3)}{2} = \frac{4}{2} = 2$
 $VT = \frac{MAX+MIN}{2} = \frac{1+(-3)}{2} = \frac{-2}{2} = -1$
 $HS = \frac{PL}{360} = \frac{90}{360} = \frac{1}{4}$
 $HT \rightarrow \sin = 22.5^\circ$ (right 22.5°)
 $\rightarrow \cos = 45^\circ$ (right 45°)

$\frac{1}{VS}(y-VT) = \sin \frac{1}{HS}(x-HT)$ $\frac{1}{VS}(y-VT) = \cos \frac{1}{HS}(x-HT)$
 $\frac{1}{2}(y+1) = \sin 4(x-22.5^\circ)$
 $\frac{1}{2}(y+1) = \cos 4(x-45^\circ)$

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$\frac{1}{VS}(y-VT) = \sin \frac{1}{HS}(x-HT)$
 $VS = \frac{MAX-MIN}{2} = \frac{-2-10}{2} = \frac{-12}{2} = -6$
 $VT = \frac{MAX+MIN}{2} = \frac{-2+10}{2} = \frac{8}{2} = 4$
 $HS = \frac{PL}{360} = \frac{120}{360} = \frac{1}{3}$
 $HT = \sin 45^\circ$
 $\cos: -45^\circ$ / or 75°

$\therefore \frac{1}{-6}(y-4) = \sin 3(x-45^\circ)$
 $\therefore \frac{1}{-6}(y-4) = \cos 3(x+45^\circ)$

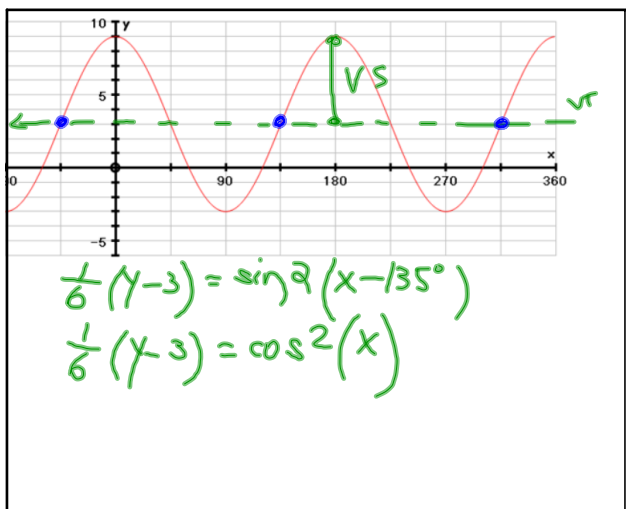
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$\frac{1}{VS}(y-VT) = \sin \frac{1}{HS}(x-HT)$ $\frac{1}{VS}(y-VT) = \cos \frac{1}{HS}(x-HT)$

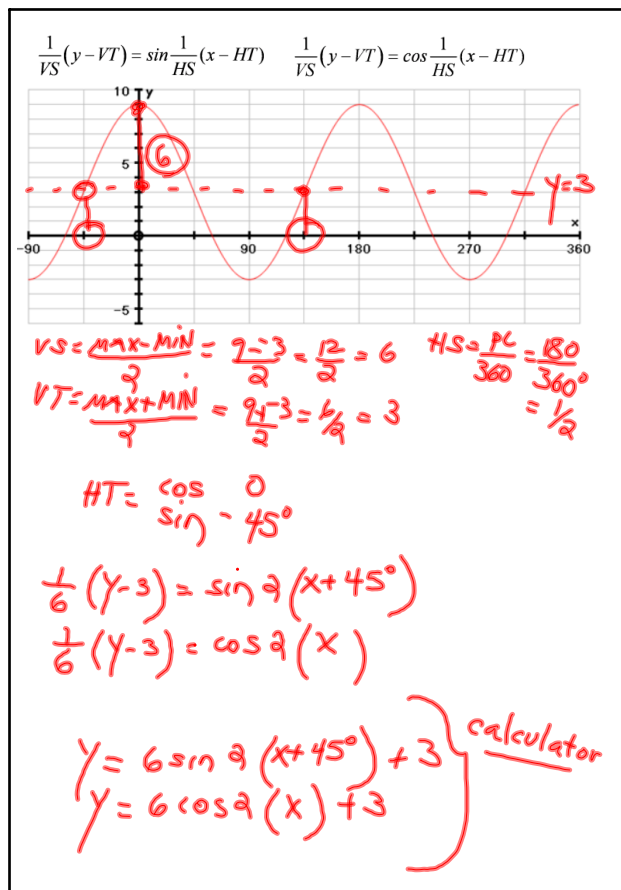
$VS = \frac{MAX-MIN}{2} = \frac{-2-10}{2} = \frac{-12}{2} = -6$
 $VT = \frac{MAX+MIN}{2} = \frac{-2+10}{2} = \frac{8}{2} = 4$
 $HS = \frac{PL}{360} = \frac{120}{360} = \frac{1}{3}$
 $HT = \sin$ (where did min move?) 45°
 \cos (where did max move?) -45°

$\frac{1}{-6}(y-4) = \sin 3(x-45^\circ)$
 $\frac{1}{-6}(y-4) = \cos 3(x+45^\circ)$

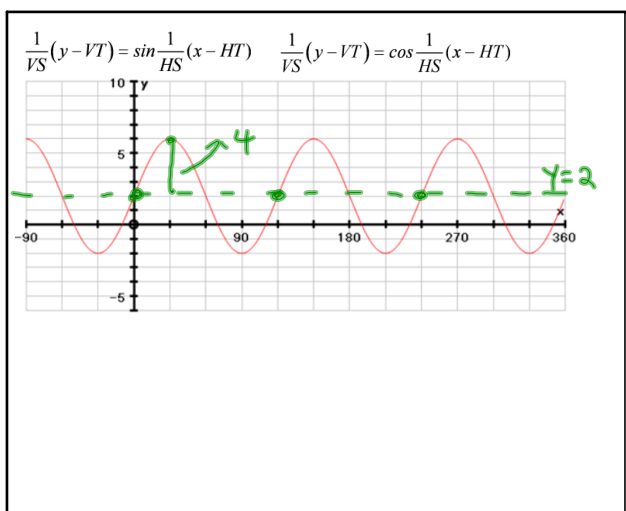
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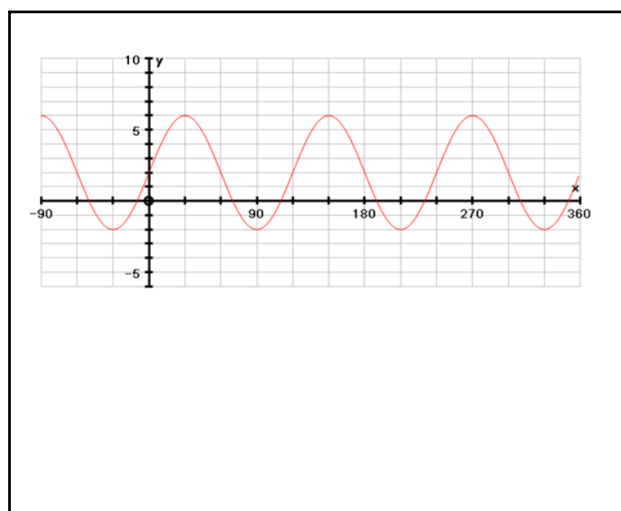
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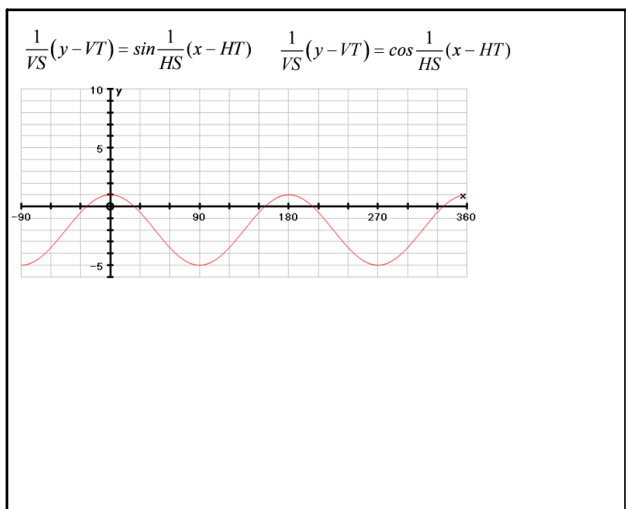
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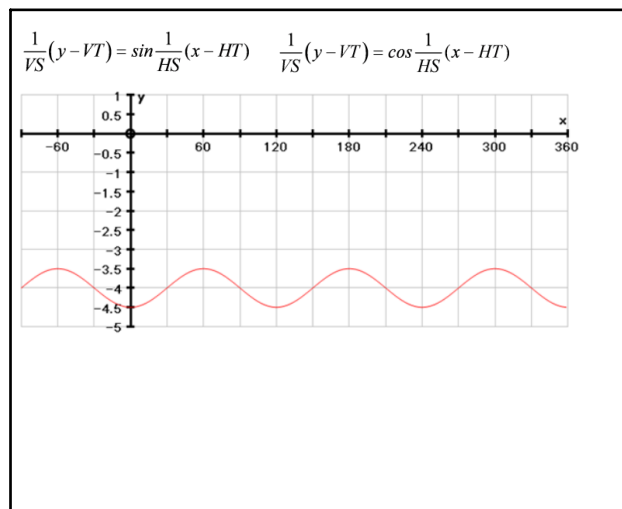
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