Today's Plan:

Learning Target (standard): I will review for the semester exam.

Students will: Complete practice problems over previous concepts at the boards and study for my exam.

Teacher will: Provide practice problems over previous concepts, check homework problems for accuarcy and provide students feedback, describe and provide examples of exam problems.

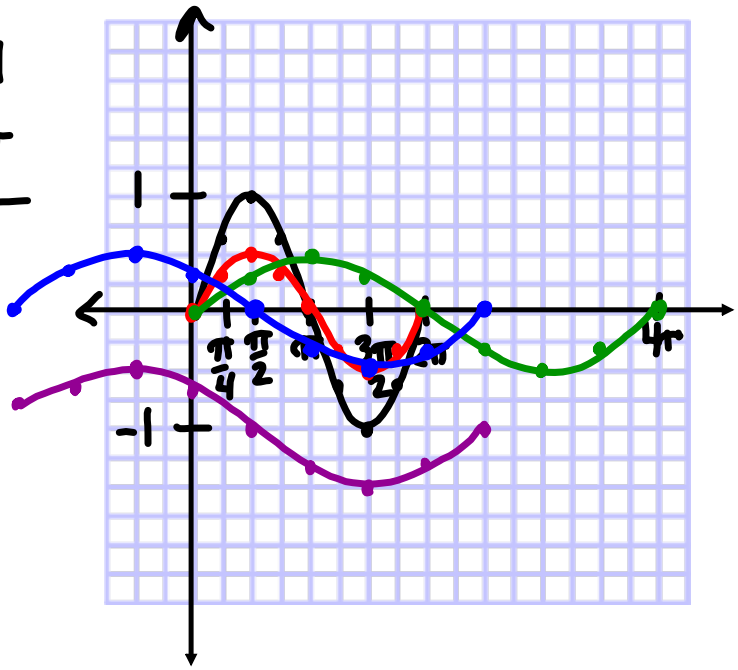
Assessment: Board work

Differentiation: Students will work at the board, actively engage in practice review concepts with the aid of other students and the teacher.

Graph using transformations.

$$y = \frac{1}{2}\sin\left(\frac{\theta}{2} + \frac{3\pi}{4}\right) - 1$$

parent: $y = \sin\theta$ amp = 1, $P = 2\pi$, P.S. = —



1) $y = \frac{1}{2}\sin\theta$ v.c. by $\frac{1}{2}$, amp = $\frac{1}{2}$

2) $y = \frac{1}{2}\sin\left(\frac{1}{2}\theta\right)$ h.s. by 2, $P = 4\pi$

3) $y = \frac{1}{2}\sin\left(\frac{1}{2}\left(\theta + \frac{3\pi}{2}\right)\right)$ shift left $\frac{3\pi}{2}$, P.S. = $-\frac{3\pi}{2}$

4) $y = \frac{1}{2}\sin\left(\frac{\theta}{2} + \frac{3\pi}{4}\right) - 1$ shift down 1

θ	y
0	0
$\frac{\pi}{4}$	$\frac{\sqrt{2}}{2} \approx .707$
$\frac{\pi}{2}$	1
$\frac{3\pi}{4}$	$\frac{\sqrt{2}}{2}$
π	0
$\frac{5\pi}{4}$	$-\frac{\sqrt{2}}{2}$
$\frac{3\pi}{2}$	-1
$\frac{7\pi}{4}$	$-\frac{\sqrt{2}}{2}$
2π	0

Graph using transformations.

$$y=\frac{1}{2}\sin\left(\frac{\theta}{2}+\frac{3\pi}{4}\right)-1$$

parent: $y=\sin\theta$ amp = 1, $P=2\pi$, P.S. = –

1) $y=\frac{1}{2}\sin\theta$ v.c. by $\frac{1}{2}$ amp = $\frac{1}{2}$

2) $y=\frac{1}{2}\sin\left(\frac{1}{2}\theta\right)$ h.s. by 2 $P=4\pi$

3) $y=\frac{1}{2}\sin\left(\frac{1}{2}\left(\theta+\frac{3\pi}{2}\right)\right)$ shift left $\frac{3\pi}{2}$

4) $y=\frac{1}{2}\sin\left(\frac{\theta}{2}+\frac{3\pi}{4}\right)-1$ shift down 1 P.S. = $-\frac{3\pi}{2}$

x	y
0	0
$\frac{\pi}{4}$	$\frac{\sqrt{2}}{2}\approx.707$
$\frac{\pi}{2}$	1
$\frac{3\pi}{4}$	$\frac{\sqrt{2}}{2}$
π	0
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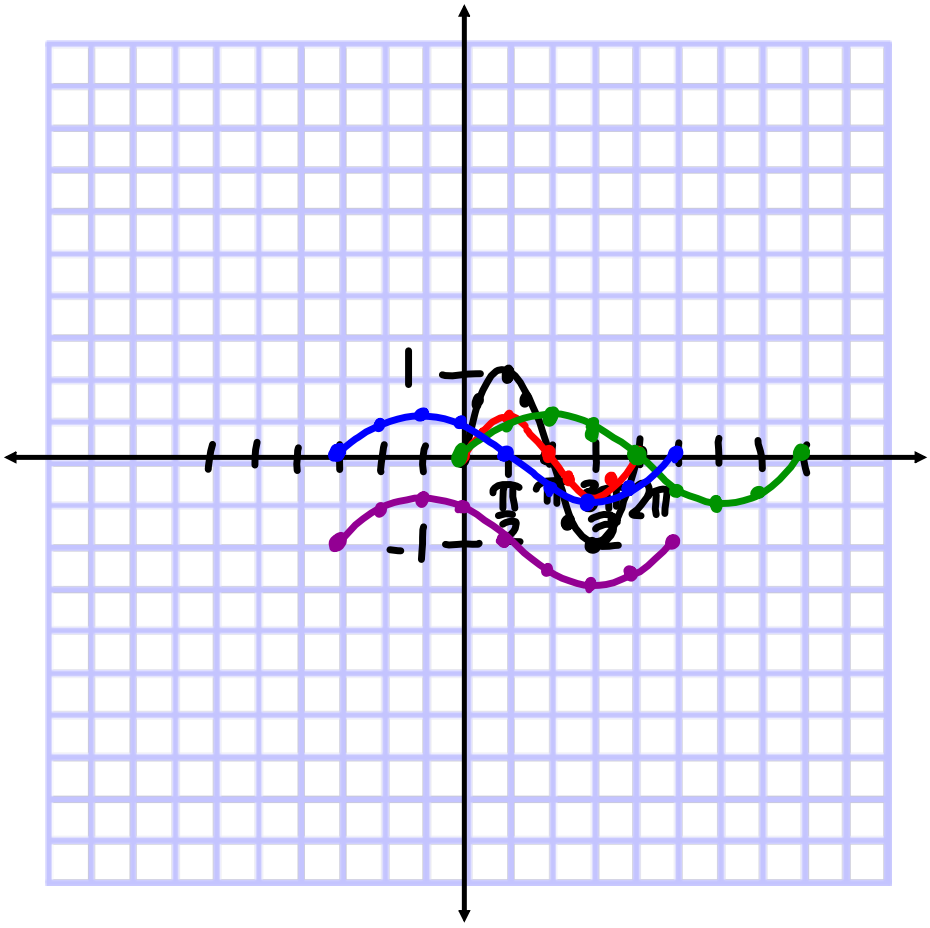
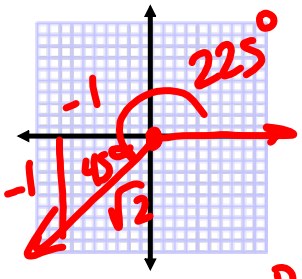
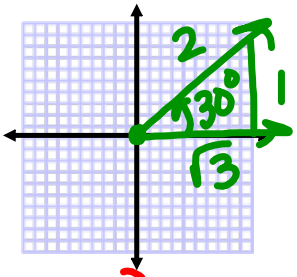


$\sin 255^\circ$

$= \sin(225^\circ + 30^\circ)$





$= \sin 225^\circ \sin 30^\circ + \cos 225^\circ \cos 30^\circ$

$= \left(-\frac{\sqrt{2}}{2}\right)\left(\frac{1}{2}\right) + \left(-\frac{\sqrt{2}}{2}\right)\left(\frac{\sqrt{3}}{2}\right)$

$= -\frac{\sqrt{2}}{4} - \frac{\sqrt{6}}{4}$

$= -\frac{\sqrt{2}-\sqrt{6}}{4}$

Convert each degree measure into radians.

32) 1005°

$1^\circ = \frac{\pi}{180}$

$1005^\circ = \frac{67\pi}{12}$

$1005 \cdot 1^\circ = \frac{\pi}{180} \cdot 1005$

33) 30°

$30 \cdot 1^\circ = \frac{\pi}{180} \cdot 30$

$30^\circ = \frac{\pi}{6}$

Convert each radian measure into degrees.

34) $\frac{41\pi}{12}$

$1 = \frac{180^\circ}{\pi}$

$\frac{41\pi}{12} \cdot 1 = \frac{180^\circ}{\pi} \cdot \frac{41\pi}{12}$

$\frac{41\pi}{12} = 615^\circ$

35) $\frac{13\pi}{12}$

$\frac{13\pi}{12} \cdot 1 = \frac{180^\circ}{\pi} \cdot \frac{13\pi}{12}$

$\frac{13\pi}{12} = 195^\circ$

Use the angle sum identity to find the exact value of each.

36) sin 255°

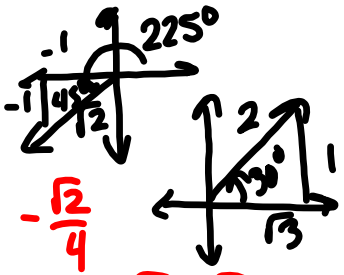
$= \sin(225^\circ + 30^\circ)$

$= \sin 225^\circ \cos 30^\circ + \cos 225^\circ \sin 30^\circ$

$= \left(-\frac{\sqrt{2}}{2}\right)\left(\frac{\sqrt{3}}{2}\right) + \left(-\frac{\sqrt{2}}{2}\right)\left(\frac{1}{2}\right)$

$= -\frac{\sqrt{6}}{4} - \frac{\sqrt{2}}{4}$

$= -\frac{\sqrt{6}-\sqrt{2}}{4}$



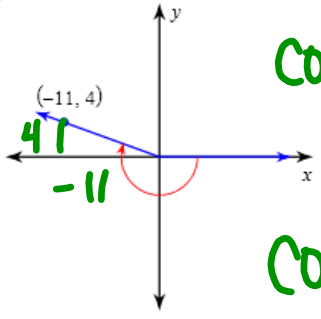
Use the angle difference identity to find the exact value of each.

37) $\sin(-105^\circ)$

38) tan 75°

Use the given point on the terminal side of angle θ to find the value of the trigonometric function

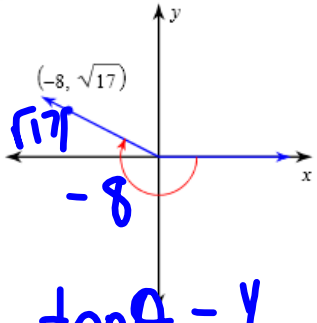
39) cot θ



$\cot\theta = \frac{x}{y}$

$\cot\theta = \frac{-11}{4}$

40) tan θ



$\tan\theta = \frac{y}{x}$

$\tan\theta = -\frac{\sqrt{17}}{8}$

37) $\sin(-105^\circ) = \sin(-60^\circ - 45^\circ)$

$= \sin(-60^\circ)\cos 45^\circ - \cos(-60^\circ)\sin 45^\circ$

$= \left(-\frac{\sqrt{3}}{2}\right)\left(\frac{\sqrt{2}}{2}\right) - \left(\frac{1}{2}\right)\left(\frac{\sqrt{2}}{2}\right)$

$= -\frac{\sqrt{6}}{4} - \frac{\sqrt{2}}{4}$

$= -\frac{\sqrt{6}-\sqrt{2}}{4}$