Pre Calculus Name_____

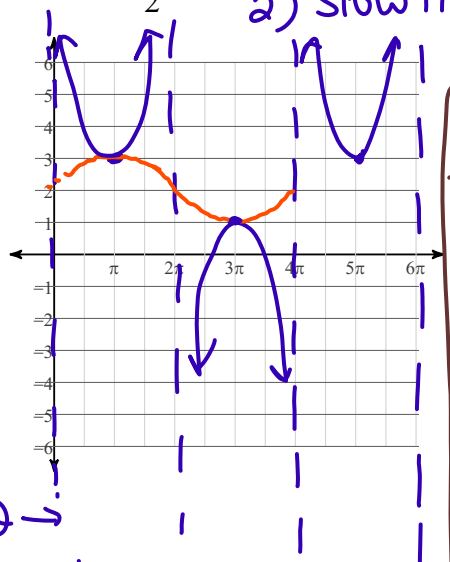
Graphing and More Review Notes

Date_____ Period____

Graph each function using radians.

1) $y = \csc\frac{\theta}{2} + 2$

1) vertical shift up 2
2) Slow it (Horizontal stretches)



csc0 → $\frac{1}{\sin\theta}$ → $\frac{1}{0}$ asy

(y)

$-3\sin 2.5\left(x+\frac{6\pi}{5}\right)-2$

Ph shift $\frac{6\pi}{5}$ Left

MID −2

Amp 3

max 1

min −5

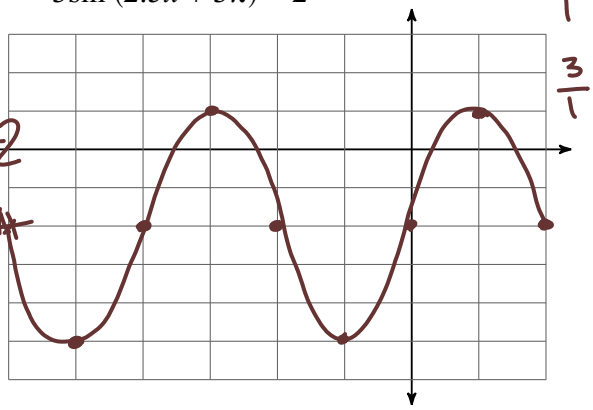
$P=\frac{2\pi}{2.5}=\frac{2\pi}{1}\,\frac{2}{5}=\frac{4\pi}{5}$

Count by $\frac{\text{Per}}{4}=\frac{4\pi}{5}\,\frac{1}{4}=\frac{\pi}{5}$

2) $y = -3\sin(2.5x + 3\pi) - 2$

$3 \div 2.5 = \frac{3}{1} \div \frac{5}{2}$

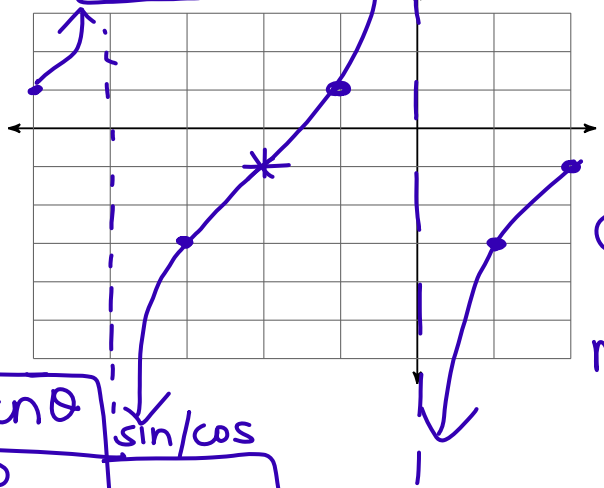
$\frac{3}{1}\ \frac{2}{5}$



MID ✓
min ✓
MID
max
MID

3) $y = 2\tan\left(3x + \frac{\pi}{2}\right) - 1$

$y = 2\tan 3\left(x + \frac{\pi}{6}\right) - 1$



Period $\frac{\pi}{3}$

Ph shift $\frac{\pi}{6}$ Left $\left(\frac{2\pi}{12}\right)$

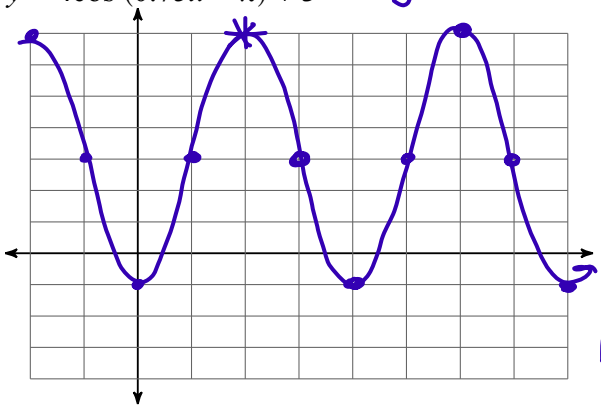
Count by $\frac{P}{4}=\frac{\pi}{3}\,\frac{1}{4}=\frac{\pi}{12}$

MID −1

θ	tanθ (sin/cos)
0	0
π/4	1
π/2	asymp
3π/4	−1
π	0

4) $y = 4\cos(0.75x - \pi) + 3$

$y = 4\cos\frac{3}{4}\left(x - \frac{4\pi}{3}\right) + 3$



Amp 4 — ph shift $\frac{4\pi}{3}$ right

mid 3

max 7

min -1

X-axis

$\frac{2\pi}{3}$

Period $\frac{2\pi}{3/4} \rightarrow \frac{2\pi}{1}\frac{4}{3} = \frac{8\pi}{3}$

Count by $\frac{p}{4} = \frac{8\pi}{3}\frac{1}{4} = \frac{2\pi}{3}$

cos
max
mid
min
mid
max

Find the exact value of each expression.

Q4

5) $\tan^{-1}(-\sqrt{3})$? angle

$\frac{\sqrt{3}/2\,(-)(+)}{1/2\,(+)(x)}$

$-\frac{\pi}{3}$

6) $\sin^{-1} -\frac{\sqrt{3}}{2}$

$-\frac{\pi}{3}$

7) $\cos^{-1} -\frac{\sqrt{3}}{2}$

$\frac{5\pi}{6}$

8) $\cot^{-1} -\frac{\sqrt{3}}{3}$

cos / sin $\rightarrow \frac{1/2}{\sqrt{3}/2}$

$\frac{2\pi}{3}$

9) $\cot^{-1} 1$

cos / sin $= \frac{\sqrt{2}/2}{\sqrt{2}/2} \rightarrow$

$\frac{\pi}{4}$

10) $\csc^{-1}\frac{2\sqrt{3}}{3}$ $\cdot\frac{\sqrt{3}}{\sqrt{3}} \rightarrow \frac{2\,3}{3\sqrt{3}} \rightarrow \frac{2}{\sqrt{3}}$ rec $\frac{\sqrt{3}}{2}$

Q1

rec of ?

sin (+) $\rightarrow \frac{\sqrt{3}}{2}$

$= \frac{\pi}{3}$

11) $\sin^{-1}\frac{\pi}{3}$

undefined

12) $\cot\left(\sec^{-1} 2\right)$

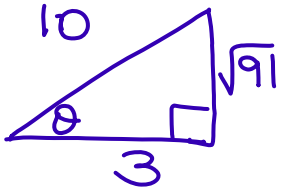
Q1 $= \frac{\pi}{3}$

sec is $\frac{1}{\cos}$ cos is $\frac{1}{2} \to \frac{\pi}{3}$

$\cot\frac{\pi}{3} = \frac{\cos \pi/3}{\sin \pi/3} = \frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}} = \frac{1}{\sqrt{3}}\frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

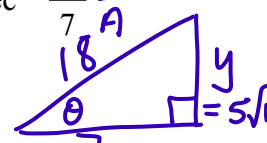
$\frac{h}{o}$

13) $\csc\cot^{-1}\frac{3\sqrt{91}}{91}$ $\frac{\sqrt{91}}{\sqrt{91}} \to \frac{3\ 91}{91\sqrt{91}} \to \frac{3}{\sqrt{91}} = \frac{a}{o}$



$= \frac{10}{\sqrt{91}}$ or $\frac{10\sqrt{91}}{91}$

14) $\sin\sec^{-1}\frac{18}{7}$ H A



$y = 5\sqrt{11}$

$\sin\theta = \frac{5\sqrt{11}}{18}$

$18^2 = y^2 + 7^2$

$324 = y^2 + 49$

$275 = y^2$

$275 = 25\ 11$

15) $\csc^{-1}\left(\tan\frac{\pi}{4}\right)$

$\tan\frac{\pi}{4} = 1$

$\frac{\pi}{2}$

16) $\tan^{-1}\left(\csc -\frac{\pi}{2}\right)$

$-\frac{\pi}{4}$

17) $\cot^{-1}\left(\tan -\frac{\pi}{4}\right)$

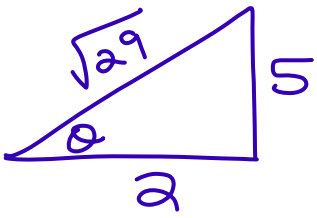
$= \frac{3\pi}{4}$

18) $\sin\cot^{-1}\frac{2}{5}$ $\frac{a}{o}$

$2^2 + 5^2$

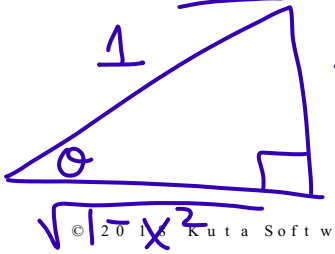
$= 4 + 25$

$= 29$



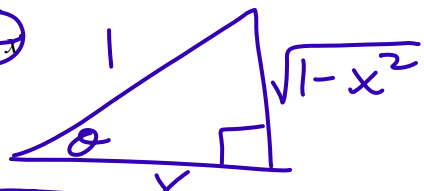
$\sin\theta = \frac{5}{\sqrt{29}}\frac{\sqrt{29}}{\sqrt{29}} = \frac{5\sqrt{29}}{29}$

19) $\cos\sin^{-1}\frac{x}{1}$ (O) (H)



$\cos\theta = \frac{\sqrt{1-x^2}}{1}$

20) $\sec\cos^{-1} x$



$\sec\theta = \frac{1}{x}$

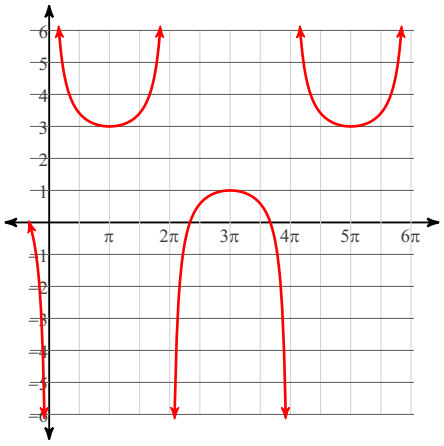
Pre Calculus Name_____

Graphing and More Review Notes

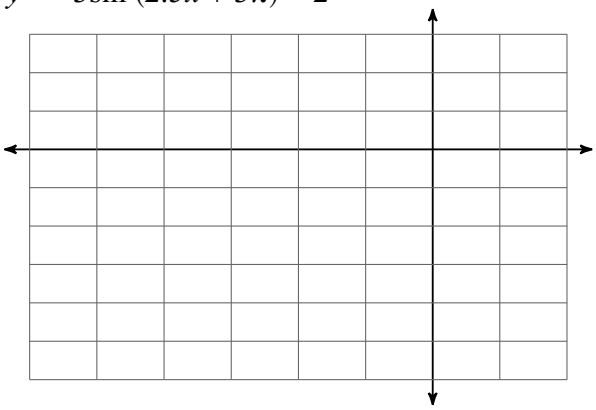
Date_____ Period____

Graph each function using radians.

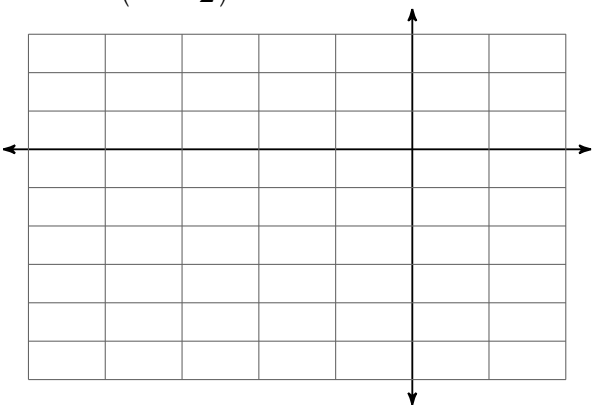
1) $y = \csc \frac{\theta}{2} + 2$



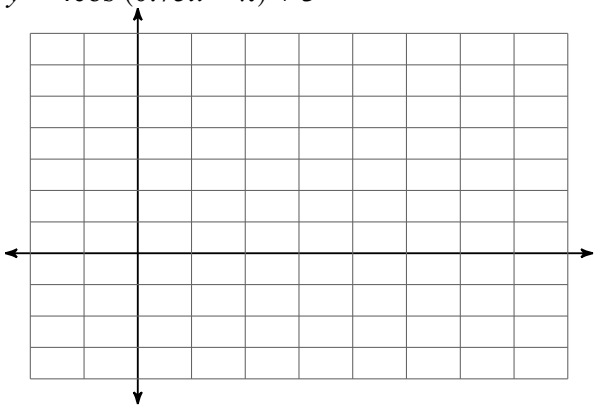
2) $y = -3\sin\left(2.5x + 3\pi\right) - 2$



3) $y = 2\tan\left(3x + \frac{\pi}{2}\right) - 1$



4) $y = 4\cos\left(0.75x - \pi\right) + 3$



Find the exact value of each expression.

5) $\tan^{-1}\left(-\sqrt{3}\right)$

$-\frac{\pi}{3}$

6) $\sin^{-1} -\frac{\sqrt{3}}{2}$

$-\frac{\pi}{3}$

7) $\cos^{-1} -\frac{\sqrt{3}}{2}$ $\frac{5\pi}{6}$

8) $\cot^{-1} -\frac{\sqrt{3}}{3}$

$\frac{2\pi}{3}$

9) $\cot^{-1} 1$

$\frac{\pi}{4}$

10) $\csc^{-1} \frac{2\sqrt{3}}{3}$

$\frac{\pi}{3}$

11) $\sin^{-1}\frac{\pi}{3}$

undefined (because 3.14/3 is bigger than 1)

12) $\cot \sec^{-1} 2$

$\frac{\sqrt{3}}{3}$

13) $\csc \cot^{-1}\frac{3\sqrt{91}}{91}$

$\frac{10\sqrt{91}}{91}$

14) $\sin \sec^{-1}\frac{18}{7}$

$\frac{5\sqrt{11}}{18}$

15) $\csc^{-1}\left(\tan\frac{\pi}{4}\right)$

$\frac{\pi}{2}$

16) $\tan^{-1}\left(\csc -\frac{\pi}{2}\right)$

$-\frac{\pi}{4}$

17) $\cot^{-1}\left(\tan -\frac{\pi}{4}\right)$

$\frac{3\pi}{4}$

18) $\sin \cot^{-1}\frac{2}{5}$

$\frac{5\sqrt{29}}{29}$

19) $\cos \sin^{-1} x$

$\sqrt{1-x^2}$

20) $\sec \cos^{-1} x$ $\frac{1}{x}$