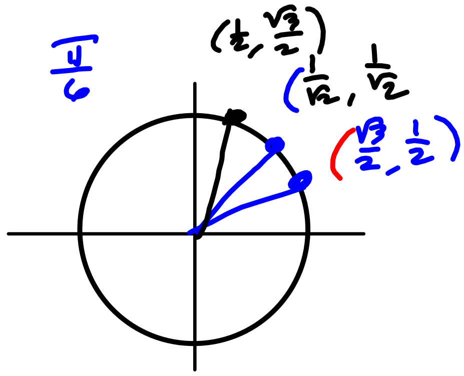
1st quadrant biggies:

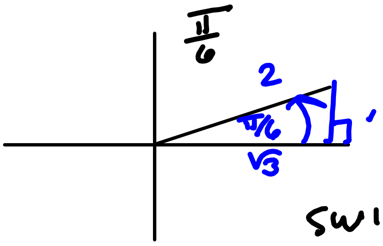
$0, \frac{\pi}{6}, \frac{\pi}{4}, \frac{\pi}{3}, \frac{\pi}{2}$

sohcahtoa

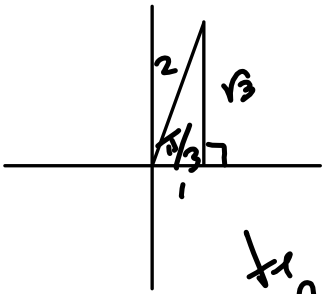
$\frac{\pi}{6}$



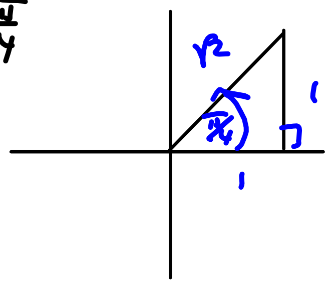
$\frac{\pi}{6}$



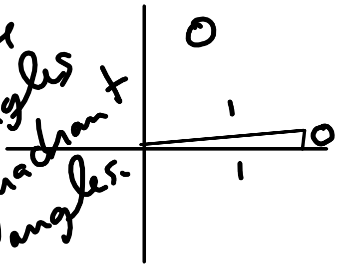
SWIDT?



$\frac{\pi}{4}$



Degenerate triangles for quadrant angles.



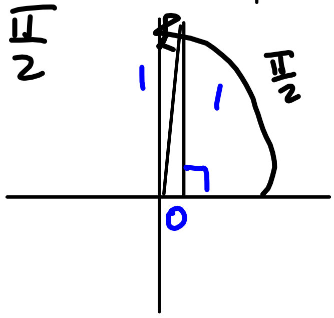
$\sin(0) = \frac{0}{1} = 0$

$\cos(0) = \frac{1}{1} = 1$

$\tan(\theta) = \frac{0}{1}$

$\cot\theta = \frac{1}{0}$ ∄

$\frac{\pi}{2}$

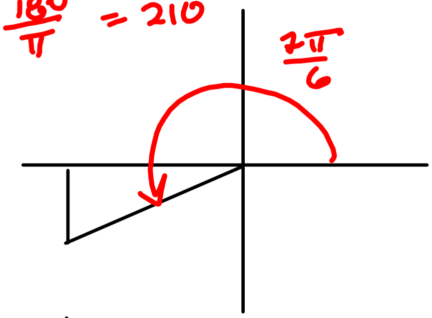


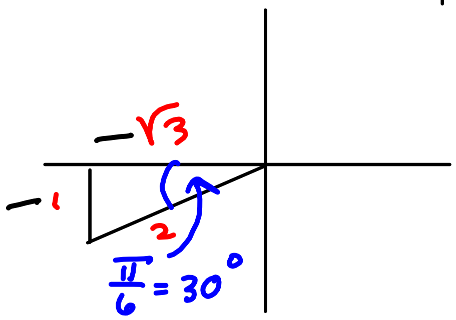
$\sin\frac{\pi}{2} = 1$

$\cos\frac{\pi}{2} = \frac{0}{1} = 0$

$\tan\frac{\pi}{2} = \frac{1}{0}$ ∄

$\frac{7\pi}{6} \cdot \frac{180^\circ}{\pi} = 210^\circ$





$\sin \frac{7\pi}{6} = -\frac{1}{2}$

$\cos \frac{7\pi}{6} = -\frac{\sqrt{3}}{2}$

$\tan \frac{7\pi}{6} = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

Divisor

$\frac{1}{\sqrt{3}}$ $\qquad 1.732 \overline{)1.00000}$

$\frac{\sqrt{3}}{3}$ $\qquad 3 \overline{)1.732}$ Ezer.

$\sqrt{3}$

$1.5^2 = 2.25$

$1.6^2 = 2.56$

$1.7^2 = 2.89$

$1.8^2 = 3.24$

1.75^2

$\sqrt{x}$

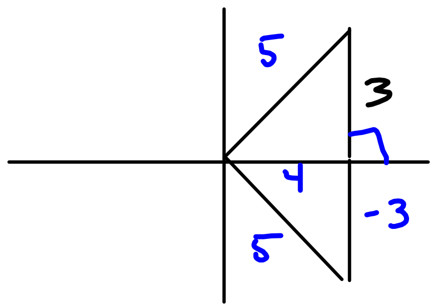
$$\frac{f(x+h)-f(x)}{h} = \frac{\sqrt{x+h}-\sqrt{x}}{h} =$$

$$= \left(\frac{\sqrt{x+h}-\sqrt{x}}{h}\right)\left(\frac{\sqrt{x+h}+\sqrt{x}}{\sqrt{x+h}+\sqrt{x}}\right) = \frac{x+h-x}{h\left(\sqrt{x+h}+\sqrt{x}\right)}$$

$$= \frac{\cancel{h}\ 1}{\cancel{h}\left(\sqrt{x+h}+\sqrt{x}\right)} \xrightarrow{h \to 0} \frac{1}{\sqrt{x}+\sqrt{x}} = \frac{1}{2\sqrt{x}}$$

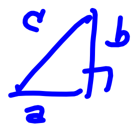
$=$

$\boxed{\cos\theta = \frac{4}{5}}$ picture



Pythagorus "sez"

$a^2+b^2=c^2$



$4^2+b^2=5^2$

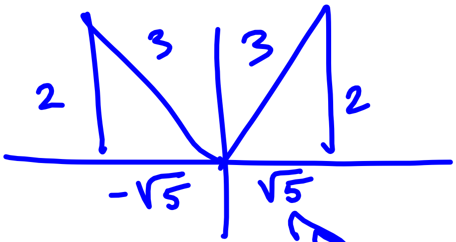
$25-16=b^2$

$9=b^2$

$\pm 3 = b$

Take the positive.

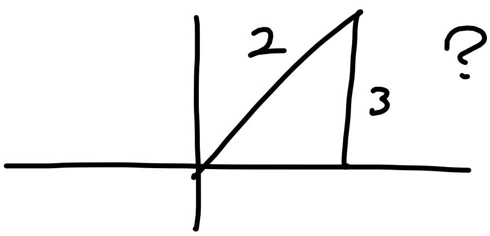
$\sin\theta = \frac{2}{3}$



Pythag....

$3^2-2^2 = 9-4=5=b^2$

$\sin\theta = \frac{3}{2}$ Nevah!



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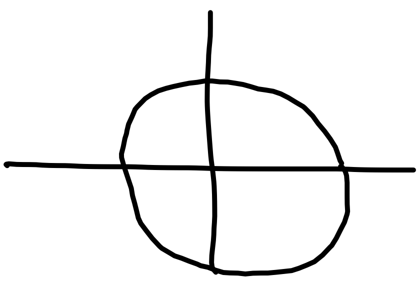
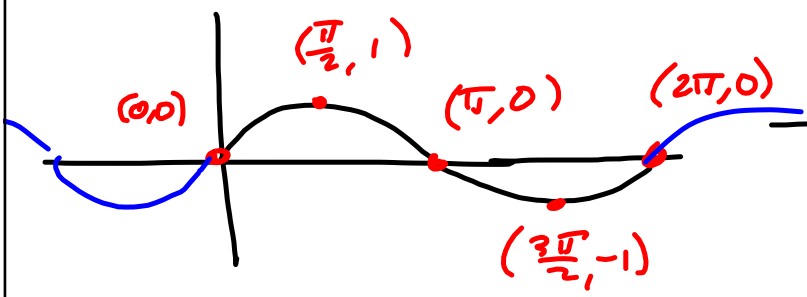
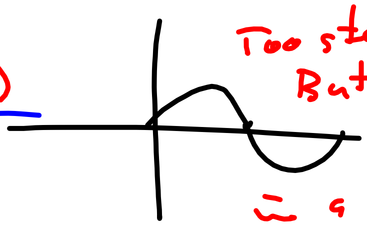
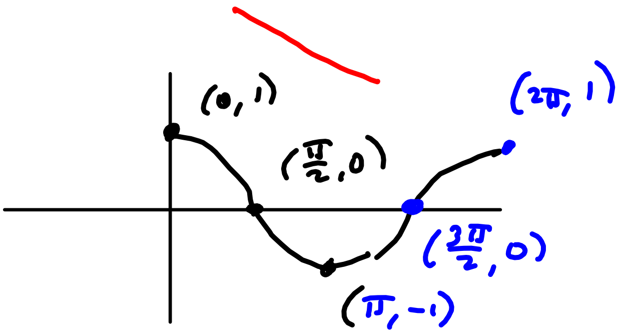
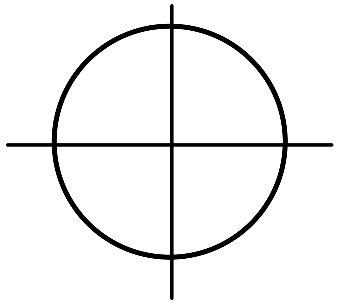






Too steep. But ok you're in a hurry. Fine.





GOAL $25\sin\left(\frac{\pi}{7}(x+5)\right)-11$

$25y$ $\quad \frac{x}{\frac{\pi}{7}}$ $\quad x-5$ $\quad y-11$

§1.2 #54 Prove the identity

~~$1-\sin^2\theta$~~ =

$\sin^2\theta - \cos^2\theta = 2\sin^2\theta - 1$

Proof

$\sin^2\theta - \cos^2\theta = \sin^2\theta - (1 - \sin^2\theta)$

$= \sin^2\theta - 1 + \sin^2\theta = 2\sin^2\theta - 1$ ∎

Pythagorean Identity

$\cos^2\theta + \sin^2\theta = 1$

55

$$\boxed{\frac{\sin\theta}{\cos\theta} + \frac{\cos\theta}{\sin\theta} = \sec\theta\csc\theta}$$

Proof $\frac{\sin\theta}{\cos\theta} \cdot \frac{\sin\theta}{\sin\theta} + \frac{\cos\theta}{\sin\theta} \cdot \frac{\cos\theta}{\cos\theta}$

$= \frac{\sin^2\theta + \cos^2\theta}{\sin\theta\cos\theta} = \frac{1}{\sin\theta\cos\theta} = \frac{1}{\sin\theta} \cdot \frac{1}{\cos\theta}$

$= \csc\theta\sec\theta$ ∎