Key

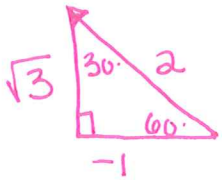
13.3 Trig Functions of General Angles Notes Day2

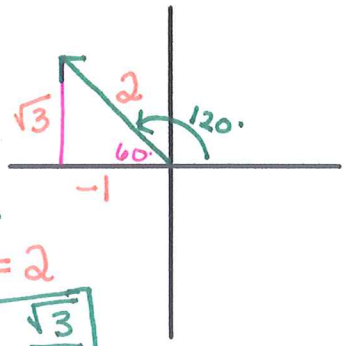
To find the EXACT trigonometric values Notes

1.) Sketch the angle
2.) Label the reference angle
3.) Draw a triangle to the x-axis and label sides
4.) Find the trig values

Examples:

a.) Find the EXACT value for $\sin 120°$



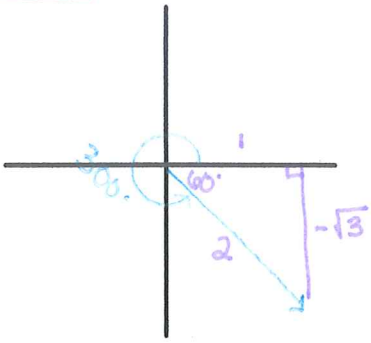


$\sin 120 = \frac{y}{r}$

$y = \sqrt{3}, \quad r = 2$

$\boxed{\sin 120° = \frac{\sqrt{3}}{2}}$

b.) Find the EXACT value for $\cos 300°$

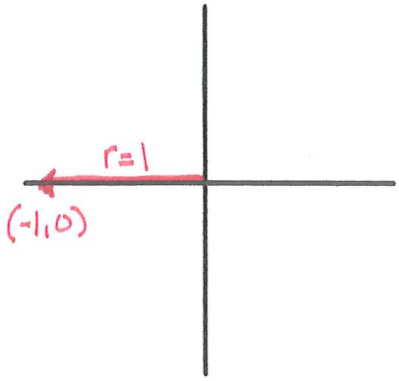


$\cos 300° = \frac{x}{r}$

$x = 1 \qquad r = 2$

$\boxed{\cos 300° = \frac{1}{2}}$

c.) Find the EXACT value for $\cos 180°$



$\cos 180° = \frac{x}{r}$

$x = -1 \qquad r = 1$

$\cos 180° = \frac{-1}{1}$

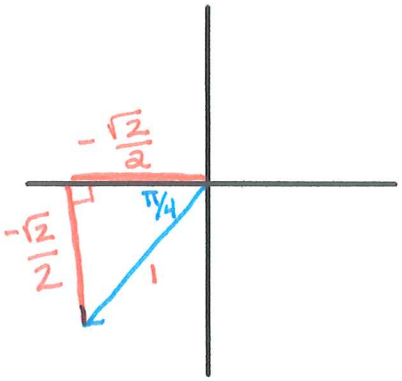
$\cos 180° = -1$

Remember Start in radians you must END in Radians!

$\frac{5\pi}{4}$ is $\frac{\pi}{4}$ more than $\frac{4\pi}{4}$ which is π

d.) Find the EXACT value of $\cos\frac{5\pi}{4}$

$\cos\frac{5\pi}{4} = \frac{x}{r}$ $x = \frac{-\sqrt{2}}{2}$ $r = 1$

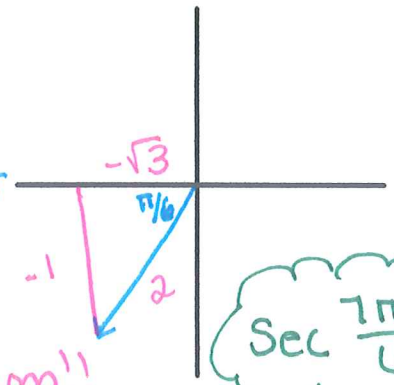


$\cos\frac{5\pi}{4} = \frac{-\frac{\sqrt{2}}{2}}{1}$

$\cos\frac{5\pi}{4} = -\frac{\sqrt{2}}{2}$

e.) Find the EXACT value for $\sec\frac{7\pi}{6}$

Recall: $\frac{6\pi}{6}$ is π $\therefore$ $\frac{7\pi}{6}$ is $\frac{\pi}{6}$ more than π



$\sec\frac{7\pi}{6} = \frac{r}{x}$ $r = 2$ $x = -\sqrt{3}$

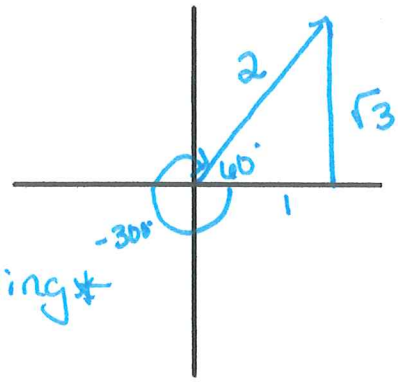
$\sec\frac{7\pi}{6} = \frac{2}{-\sqrt{3}}$ * Ding Ding Ding * No radicals in denom!!

$-\frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{3}}{-\sqrt{9}} = -\frac{2\sqrt{3}}{3}$

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

Show Me Problems:

1.) Find the EXACT value of csc -300°



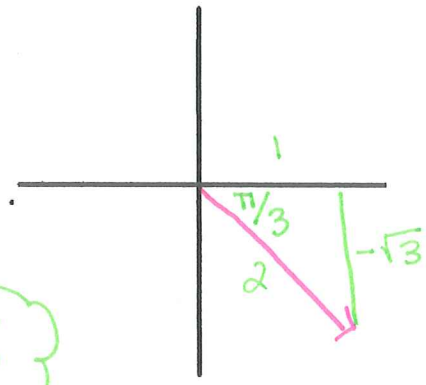
$\csc -300° = \frac{r}{y}$ $r = 2$, $y = \sqrt{3}$

$\csc -300° = \frac{2}{\sqrt{3}}$ * Ding Ding Ding *

$\csc -300° = \frac{2\sqrt{3}}{3}$

2.) Find the EXACT value for $\tan\frac{5\pi}{3}$

$\frac{5\pi}{3} \Rightarrow \pi + \frac{2\pi}{3}$ one more $\frac{\pi}{3}$ to get to 2π



$\tan\frac{5\pi}{3} = \frac{y}{x}$ $y = -\sqrt{3}$ $x = 1$

$\tan\frac{5\pi}{3} = \frac{-\sqrt{3}}{1}$ $\tan\frac{5\pi}{3} = -\sqrt{3}$