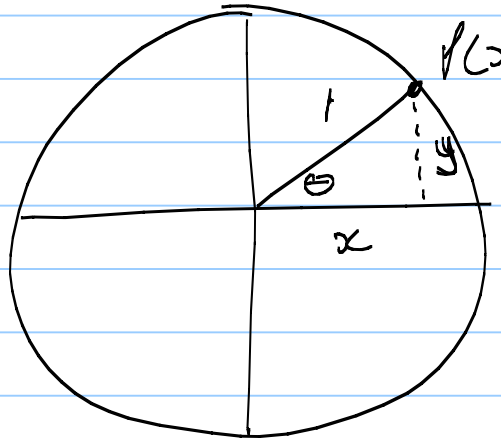
SIN AND COS FUNCTIONS IN STANDARD POSITION

Note Title 10/20/2011

- LETS EXAMINE A UNIT CIRCLE (RADIUS EQUALS 1 UNIT)



$\sin\theta = \frac{y}{1} = y$

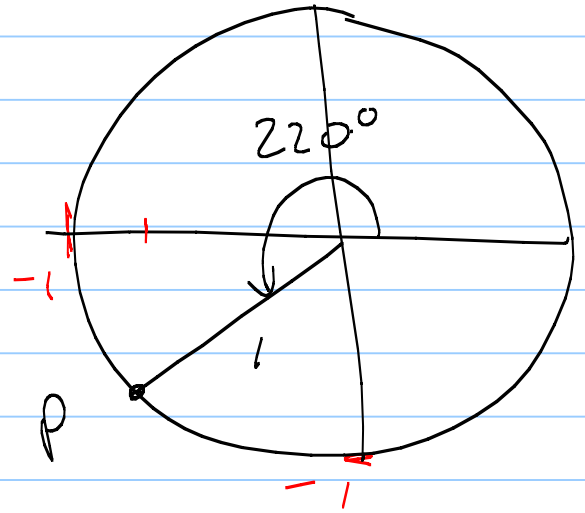
$\cos\theta = \frac{x}{1} = x$

$P(\cos\theta, \sin\theta)$

∴ FOR ANY POSITION OF "P" ON THE UNIT CIRCLE

X-VALUE IS $\cos\theta$, Y-VALUE IS $\sin\theta$

IE FIND THE COORDINATES OF P GIVEN

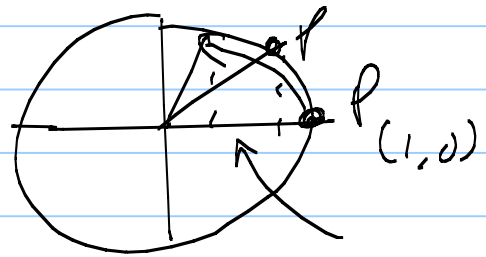


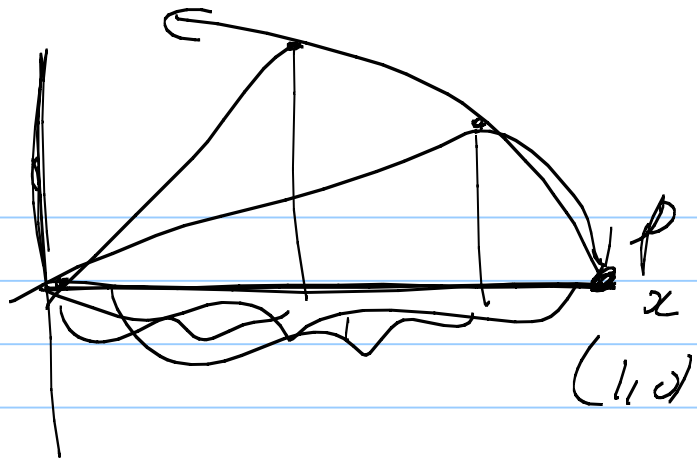
$\cos 220 = -.766$

$\sin 220 = -.643$

$\therefore P(-.766, -.643)$

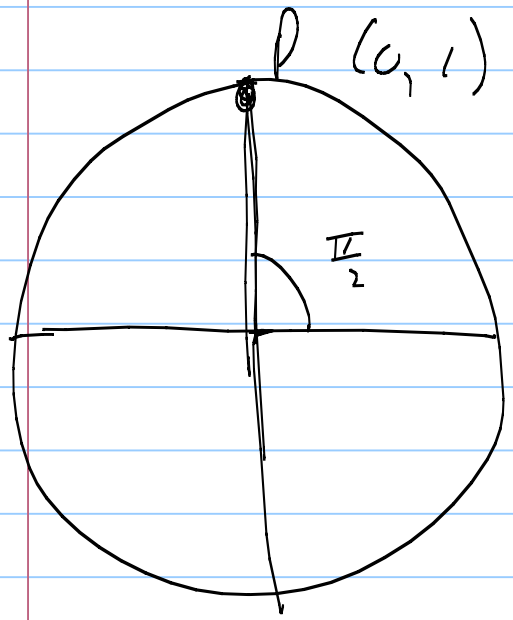
- WHAT HAPPENS WHEN THE TERMINAL ARM LANDS ON AN AXES (IN RADIANS)





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

$$\operatorname{sen} 0 = \frac{0}{1} = 0$$



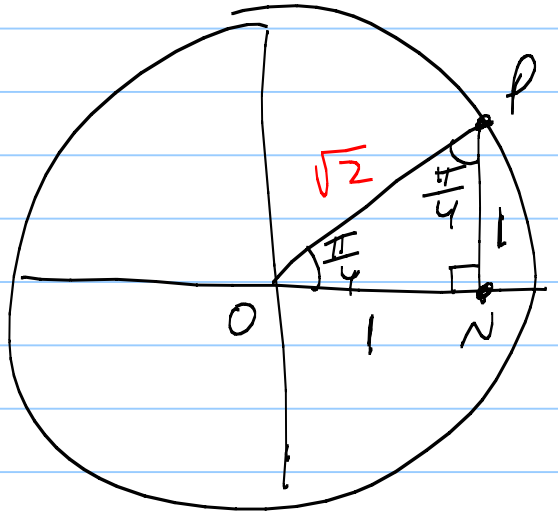
$$\frac{1}{0}$$

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

$$\operatorname{sen} \frac{\pi}{2} = \frac{1}{1} = 1$$

FUNCTION VALUES OF SPECIAL ANGLES

GIVEN THE FOLLOWING



FIND $\overline{OP}$

AND THE ANGLES

IN RADIANS

$\overline{OP}^2 = 1^2 + 1^2$

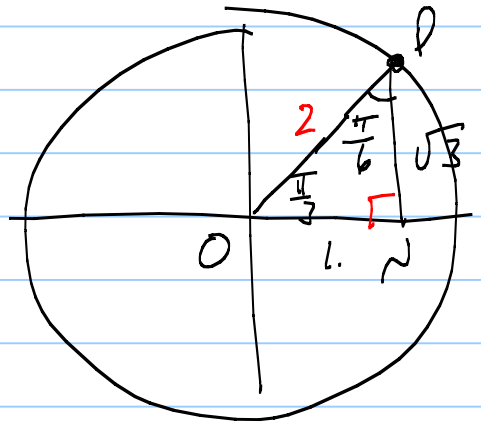
$\overline{OP}^2 = 2$

$\overline{OP} = \sqrt{2}$

$\angle N = 90 = \frac{\pi}{2}$

ISO $\triangle$ $\therefore$ $\angle OPN = \angle PON = 45^\circ = \frac{\pi}{4}$

GIVEN



FIND $\overline{OP}$ AND THE ANGLES

$\overline{OP}^2 = 1^2 + (\sqrt{3})^2$

$\overline{OP}^2 = 1 + 3$

$\overline{OP}^2 = 4$

$OP = 2$

$\angle PON = 60^\circ = \frac{\pi}{3}$

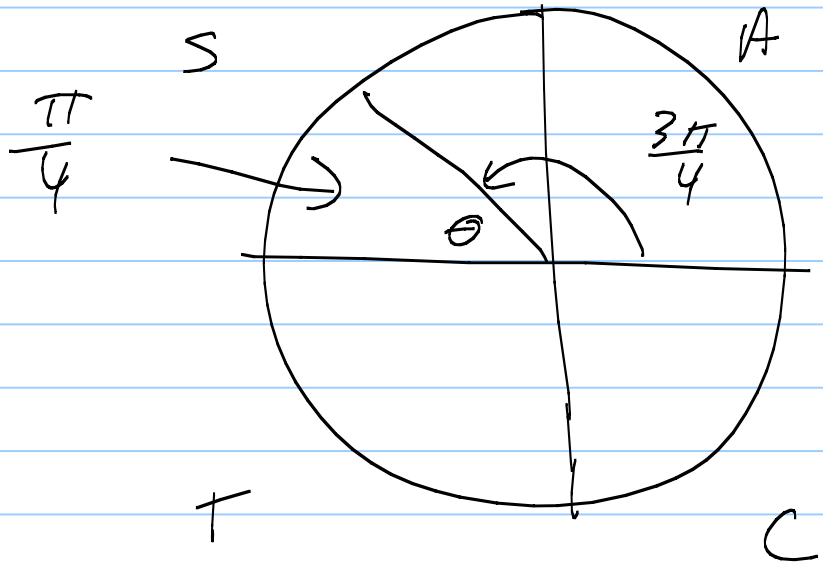
$\angle OPN = 30^\circ = \frac{\pi}{6}$

* $\csc\theta = \frac{1}{\sin\theta}$ $\sec\theta = \frac{1}{\cos\theta}$ $\cot\theta = \frac{1}{\tan\theta}$

	SENθ	COSθ	TANθ	CSCθ	SECθ	COTθ
$\frac{\pi}{6}$	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$	2	$\frac{2}{\sqrt{3}}$	$\sqrt{3}$
$\frac{\pi}{4}$	$\frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$	$\frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$	1	$\sqrt{2}$	$\sqrt{2}$	1
$\frac{\pi}{3}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\sqrt{3}$	$\frac{2}{\sqrt{3}}$	2	$\frac{1}{\sqrt{3}}$
0	0	1	0	∞	1	∞
$\frac{\pi}{2}$	1	0	∞	1	∞	0

$$\frac{1}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{\sqrt{9}} = \frac{\sqrt{3}}{3}$$

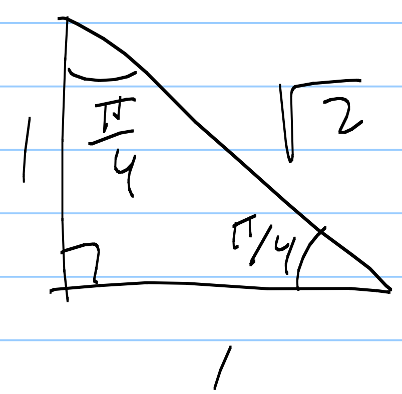
IE FIND THE EXACT VALUE OF $\sin \frac{3\pi}{4}$ AND $\cos \frac{3\pi}{4}$

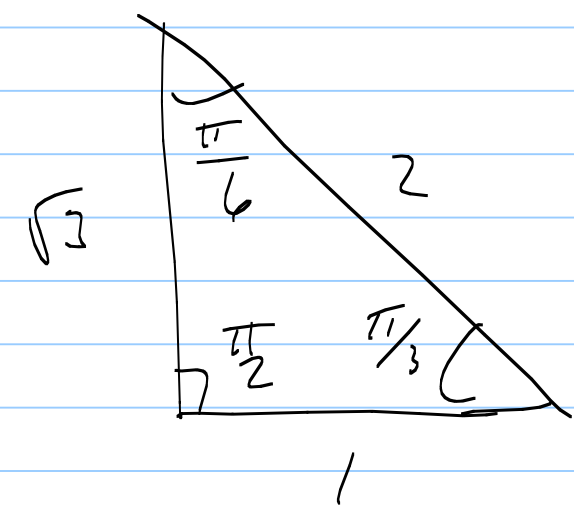


$\sin \frac{3\pi}{4} = \sin \frac{\pi}{4} = \frac{\sqrt{2}}{2}$

$\cos \frac{3\pi}{4} = \cos \frac{\pi}{4} = -\frac{\sqrt{2}}{2}$

HW Pg 179 # 1-3, 5-7 ALL.


1
π/4
√2
π/4
1


√3
π/6
2
π/2
π/3
1