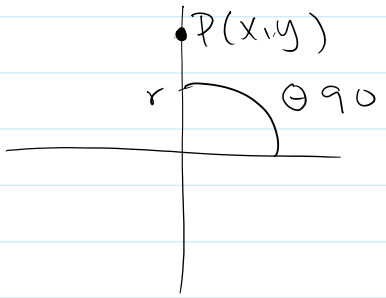
Special Angles

Thursday, November 14, 2019 12:17 PM

① Quadrantal Angles

90°



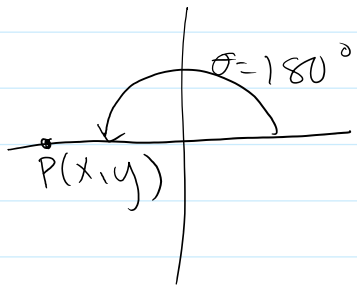
$\cos 90° = \frac{x}{r} = \frac{0}{r} = 0$

$\sin 90° = \frac{y}{r} = 1$

$r = y$

$\tan 90° = \frac{y}{x} = \frac{y}{0}$ undefined

180°



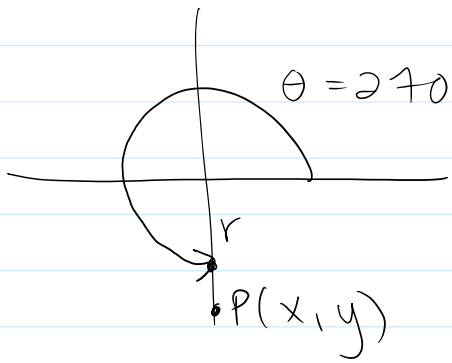
$\cos 180 = \frac{x}{r} = -1$

$x = -r$

$\sin 180 = \frac{y}{r} = \frac{0}{r} = 0$

$\tan 180 = \frac{y}{x} = \frac{0}{x} = 0$

270°



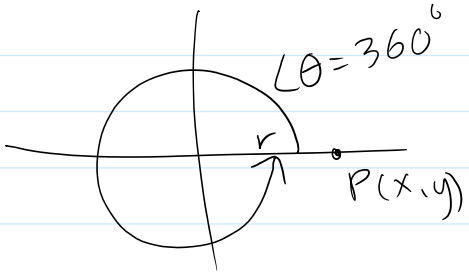
$\cos 270 = \frac{x}{r} = \frac{0}{r} = 0$

$\sin 270 = \frac{y}{r} = -1$

$y = -r$

$\tan 270 = \frac{y}{x} = \frac{y}{0} =$ undefined

0/360°



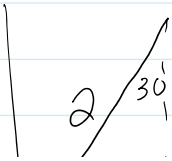
$\cos 360 = \frac{x}{r} = 1$

$x = r$

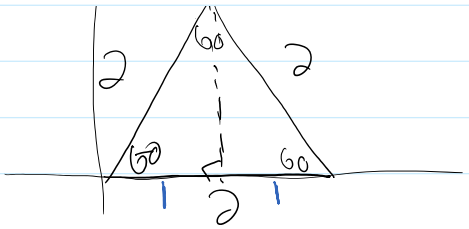
$\sin 360 = \frac{y}{r} = \frac{0}{r} = 0$

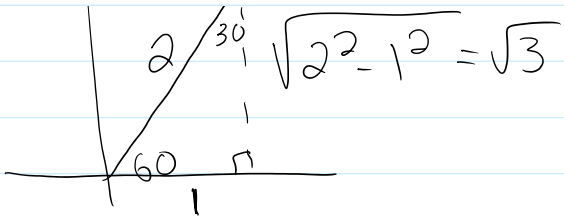
$\tan 360 = \frac{y}{x} = \frac{0}{x} = 0$

② 30° and 60°

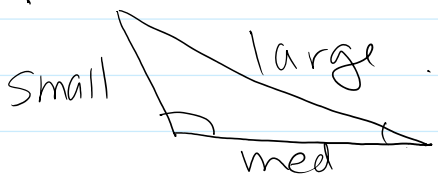


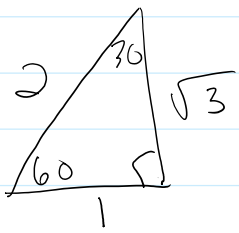
$\sqrt{2^2 - 1^2} = \sqrt{3}$

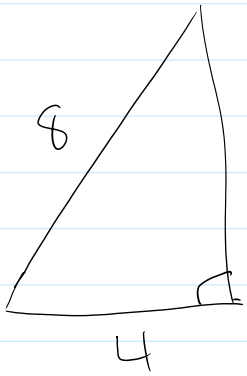




$30 : 60 : 90$
$1 : \sqrt{3} : 2$

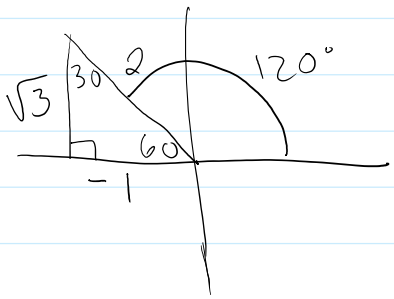






$4 : 4\sqrt{3} : 8$
$1 : \sqrt{3} : 2$

Give the primary trig ratios for $\angle\theta = 120^\circ$



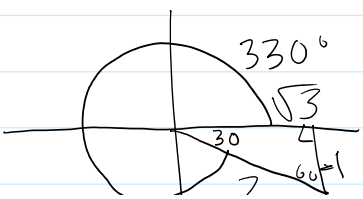
30	60	90
1	$\sqrt{3}$	2

$\cos 120^\circ = \frac{x}{r} = \frac{-1}{2}$

$\sin 120^\circ = \frac{y}{r} = \frac{\sqrt{3}}{2}$

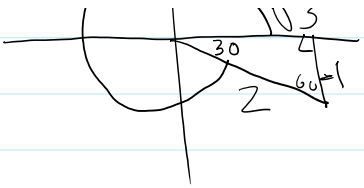
$\tan 120^\circ = \frac{y}{x} = \frac{\sqrt{3}}{-1} = -\sqrt{3}$

Try: Find primary trig ratios for $\angle\theta = 330^\circ$



$\cos 330 = \frac{x}{r} = \frac{\sqrt{3}}{2}$

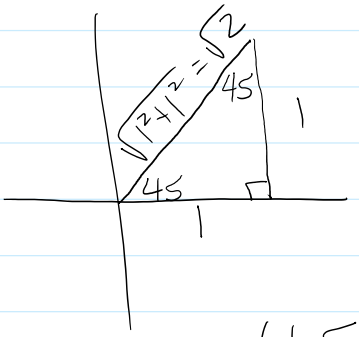
$\sin 330 = \frac{y}{\quad} = \frac{-1}{\quad}$

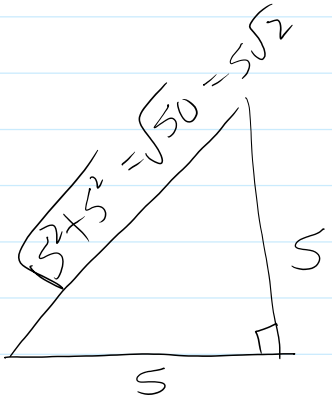


$$\sin 330 = \frac{y}{r} = -\frac{1}{2}$$

$$\tan 330 = \frac{y}{x} = \frac{-1}{\sqrt{3}}$$

③ 45° Angles.

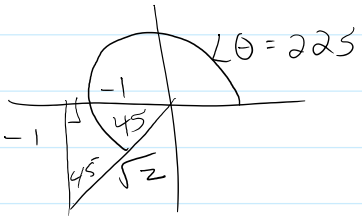




45 : 45 : 90

1 : 1 : $\sqrt{2}$

Find the primary trig ratios for $\angle\theta = 225$



$$\cos 225 = \frac{x}{r} = \frac{-1}{\sqrt{2}}.$$

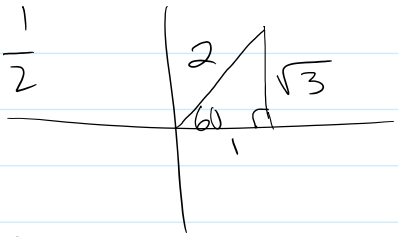
$$\sin 225 = \frac{y}{r} = \frac{-1}{\sqrt{2}}.$$

$$\tan 225 = \frac{y}{x} = \frac{-1}{-1} = 1$$

Eg $\cos\theta = \frac{1}{2}$ Find $\angle\theta$ for $0° \le \theta \le 360°$

S	✓ A
T	✓ C

$$\cos = \frac{x}{r} = \frac{1}{2}$$



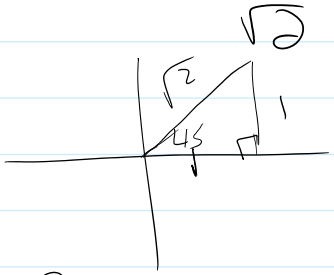
QI $\angle\theta = 60°$

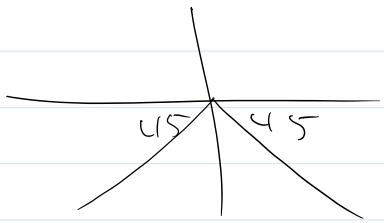
QIV $\angle\theta = 360 - 60 = 300°$

Try $\sin\theta = \frac{-1}{\sqrt{2}}$. Find $\angle\theta$ if $0° \le \theta \le 360°$

S | A

T | C

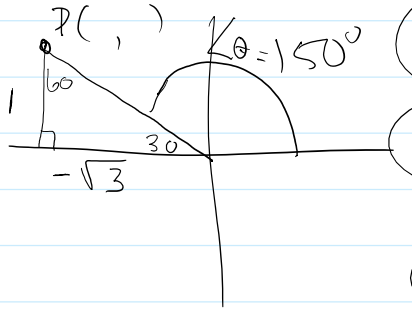




QIII $180 + 45 = 225°$

QIV $360 - 45 = 315°$

Give possible coordinates for Point P on the terminal arm of $\angle\theta = 150°$ in standard position.



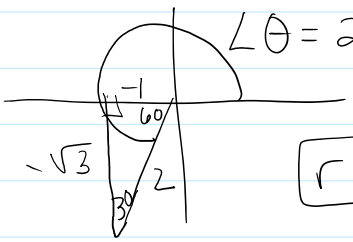
$P(-\sqrt{3}, 1)$ ←

$P(-2\sqrt{3}, 2)$

$P(-5\sqrt{3}, 5)$

Theta

Give the coordinates of P on the terminal arm of $\angle\theta = 240$ and $r = 6$.



$P(-3, -3\sqrt{3})$

$r = 6$

$r = 7$

$2 \times \frac{7}{2} = 7$ $\quad \frac{2 \times \square}{2} = \frac{7}{2}$ $\quad \left(-\frac{7}{2}, -\frac{7\sqrt{3}}{2}\right)$

$y = \frac{1}{2}$

Handout

Pg 409-416 #6.

Pg 433-436 #9, 14, 15, 20, 21