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MATH@TD

MCR3U

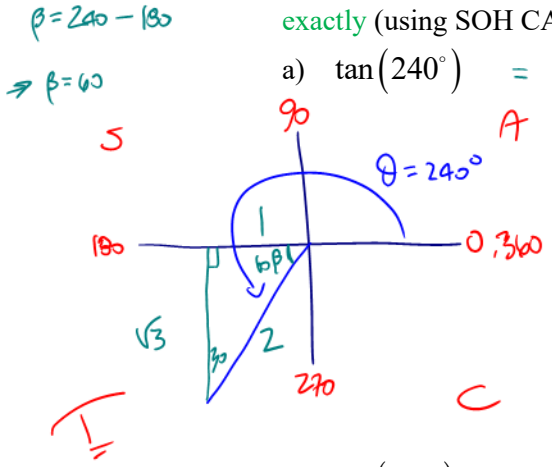
Name_____

Unit 5 *– Trigonometric Ratios*

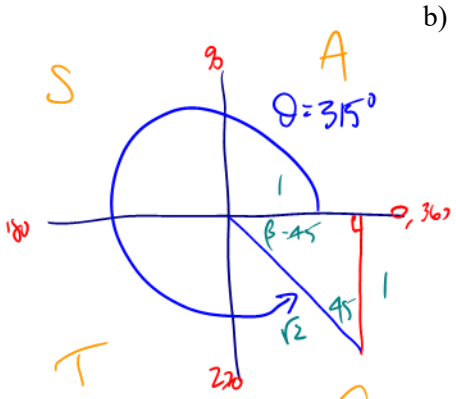
Speed Quiz (Practice 1): Angles of Rotation and Trig Ratios **(No Calculators!!)**

1. Draw the **Angle of Rotation**. Determine the **Related Acute Angle**. Determine the trig ratios exactly (using SOH CAH TOA and CAST) *(1 point each)*

a) $\tan(240^\circ) = +\sqrt{3}$



b) $\sin(315^\circ)$

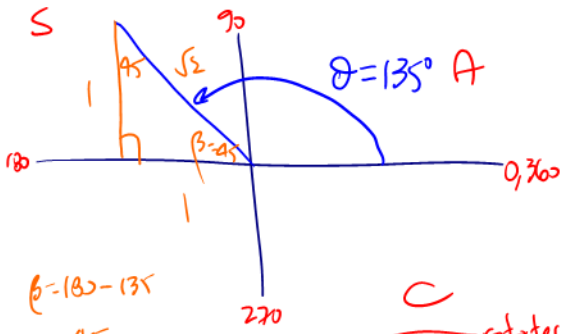


$= -\frac{1}{\sqrt{2}}$

$= -\frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$= -\frac{\sqrt{2}}{2}$

c) $\cos(135^\circ) = -\frac{1}{\sqrt{2}}$

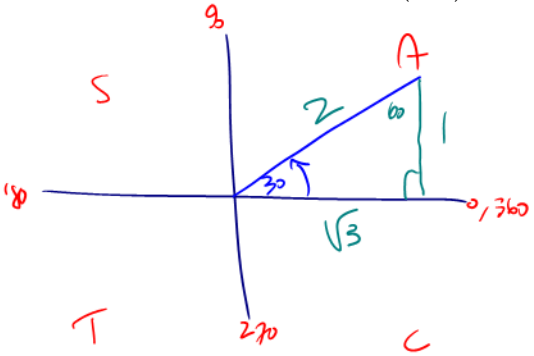


$= -\frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

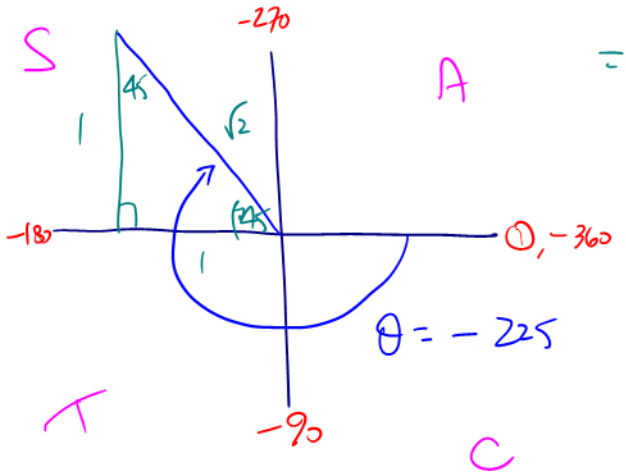
$= -\frac{\sqrt{2}}{2}$

β = 180 − 135
= 45

d) $\sin(30^\circ) = +\frac{1}{2}$



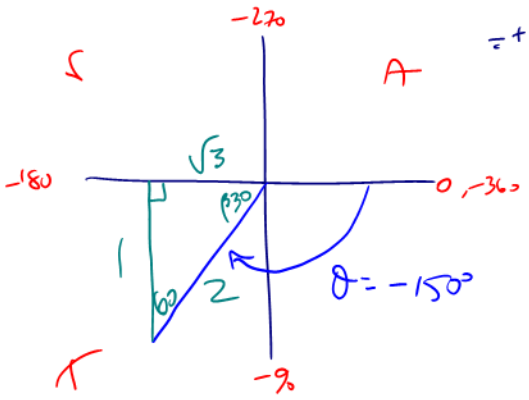
e) $\cos(-225^\circ)$ rotates clockwise (opposite to + positive angle.)



$= -\frac{1}{\sqrt{2}}$

$= -\frac{\sqrt{2}}{2}$

f) $\tan(-150^\circ) = +\frac{1}{\sqrt{3}}$

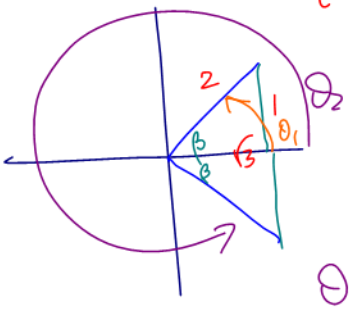


$= +\frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$= +\frac{\sqrt{3}}{3}$

2. For $0^\circ \le \theta \le 360^\circ$, determine the angles of rotation given the trig ratio: (*2 marks each*)

a) $\cos(\theta) = \frac{\sqrt{3}}{2}$ Q1, Q4

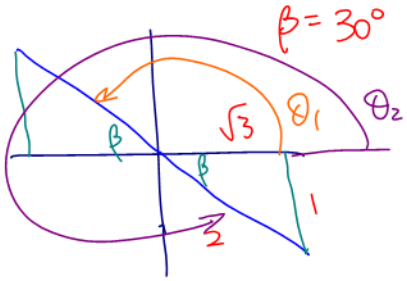


$\beta = 30^\circ$

$\theta_1 = 30^\circ$

$\theta_2 = 360 - \beta$
$= 360 - 30$
$= 330^\circ$

b) $\tan(\theta) = -\frac{1}{\sqrt{3}}$ Q2, Q4

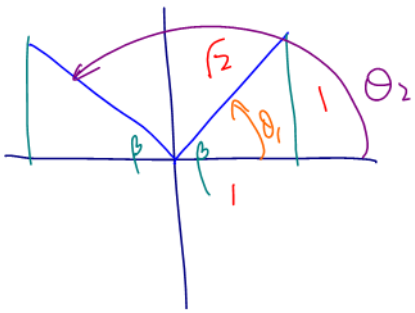


$\theta_1 = 180 - \beta$
$= 180 - 30$
$= 150^\circ$

$\theta_2 = 360 - \beta$
$= 360 - 30$
$= 330^\circ$

c) $\sin(\theta) = \frac{1}{\sqrt{2}}$ Q1, Q2

$\beta = 45^\circ$



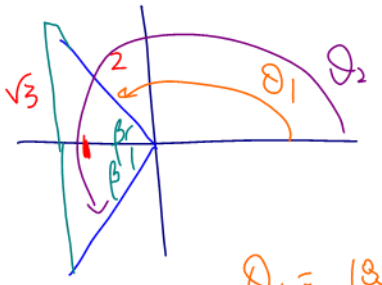
$\theta_1 = \beta = 45^\circ$

$\theta_2 = 180 - \beta$
$= 180 - 45$
$= 135^\circ$

d) $\sec(\theta) = -2$ Q2, Q3

$\Rightarrow \cos(\theta) = -\frac{1}{2}$

$\beta = 60^\circ$



$\theta_1 = 180 - \beta$
$= 180 - 60$
$= 120^\circ$

$\theta_2 = 180 + \beta$
$= 180 + 60$
$= 240^\circ$