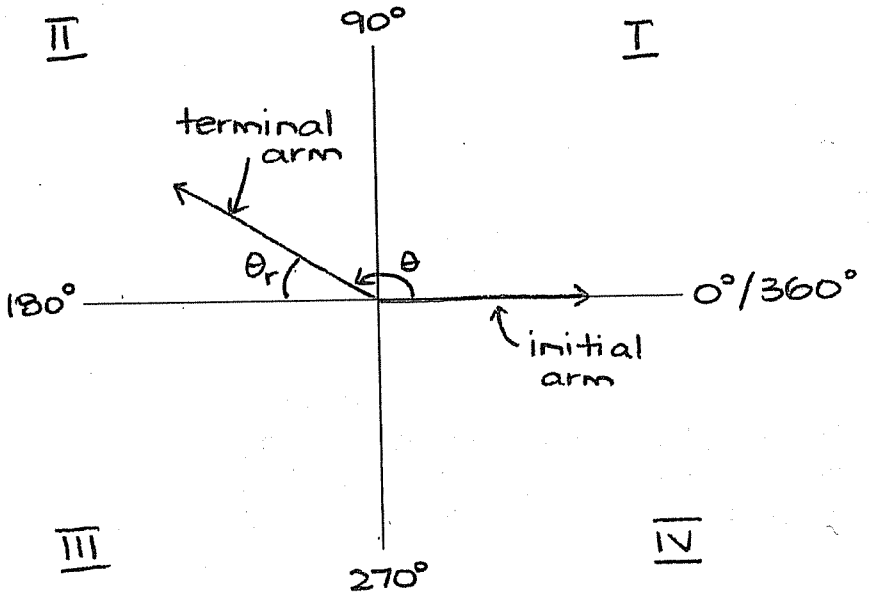
Name: KEY

Pre-Calculus 11
2.1 Lesson ~ Angles in Standard Position

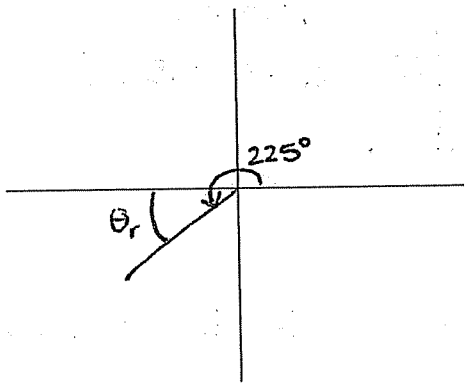
Angles in Standard Position



θ_r = reference ∠ (between terminal arm & horizontal axis)

$0° \leq \theta_r < 90°$

Example #1: Sketch the angle 225° and calculate its reference angle.

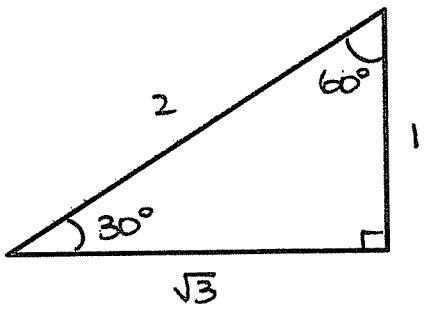


$\theta_r = 225° - 180°$

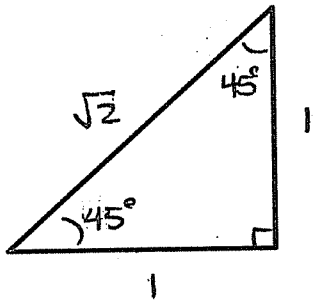
$= 45°$

Special Triangles

30°/60°/90°



45°/45°/90°



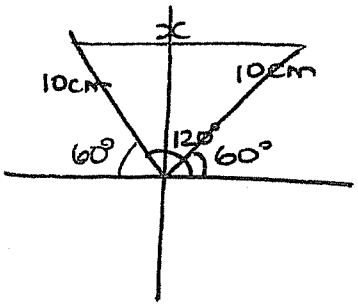
Example #2: Write the exact value of:

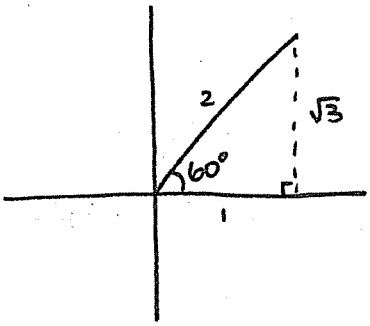
a) $\sin 45^\circ = \frac{1}{\sqrt{2}} = \frac{1 \cdot \sqrt{2}}{\sqrt{2} \cdot \sqrt{2}} = \frac{\sqrt{2}}{2}$

b) $\cos 30^\circ = \frac{\sqrt{3}}{2}$

c) $\tan 60^\circ = \frac{\sqrt{3}}{1} = \sqrt{3}$

Example #3: Allie is learning to play the piano. Her teacher uses a metronome to help her keep time. The pendulum arm of the metronome is 10 cm long. For one particular tempo, the setting results in the arm moving back and forth from a start position of 60° to 120°. What horizontal distance does the tip of the arm move in one beat? Please give an exact answer.





$2 \cdot 5 = 10$

$1 \cdot 5 = 5$

$\sqrt{3} \cdot 5 = 5\sqrt{3}$

↳ pendulum moves $2 \cdot 5 = 10$ cm in one beat