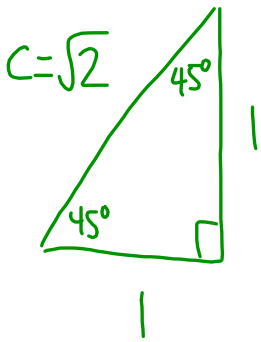
2.1 Angles in Standard Position (part II)

What is an "exact" value?

Fractions & radicals are typical forms of exact values... not rounded decimals

Special Triangle #1 (45°-45°-90°)

Sketch and label a right-isosceles triangle that has 2 legs of length 1 unit.



Find the exact value of the hypotenuse.

$c^2 = 1^2 + 1^2$

$c^2 = 2$

$c = \sqrt{2}$

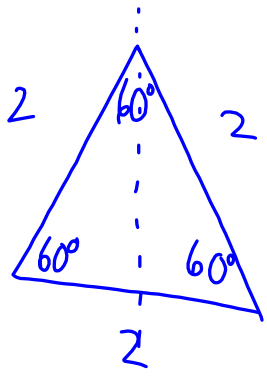
Find the exact values of $\sin 45^\circ, \cos 45^\circ, \tan 45^\circ$

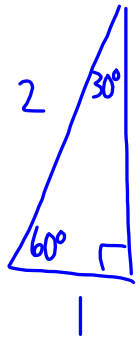
$\sin\theta = \frac{opp}{hyp}$ $\cos\theta = \frac{adj}{hyp}$ $\tan\theta = \frac{opp}{adj}$

$\sin 45^\circ = \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$ $\cos 45^\circ = \frac{1}{\sqrt{2}}$ $\tan 45^\circ = \frac{1}{1} = 1$

Special Triangle #2 (30°-60°-90°)

Sketch and label ½ of an equilateral Δ with side lengths of 2.





$h = \sqrt{3}$

Find the exact value of the height.

$h^2 + 1^2 = 2^2$

$h^2 = 3$

$h = \sqrt{3}$

Find exact values for:

$\sin 60° = \frac{\sqrt{3}}{2}$

$\sin 30° = \frac{1}{2}$

$\cos 60° = \frac{1}{2}$

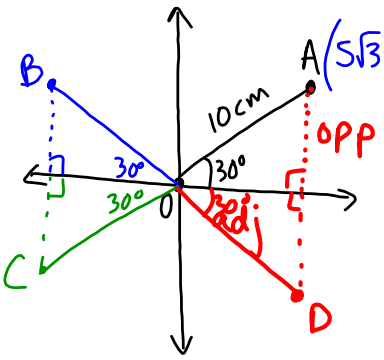
$\cos 30° = \frac{\sqrt{3}}{2}$

$\tan 60° = \frac{\sqrt{3}}{1} = \sqrt{3}$

$\tan 30° = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

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

ex) Sketch a reference angle of 30° in QI that has a terminal arm of length 10cm. Label the terminal arm OA. Find the co-ordinates of A.



x-coord

$10\times\cos 30° = \frac{adj}{10}\times 10$

$10\left(\frac{\sqrt{3}}{2}\right) = x$

$5\sqrt{3} = x$

y-coord

$\sin 30° = \frac{opp}{10}$

$10\left(\frac{1}{2}\right) = y$

$5 = y$

B is a reflection of A over the y-axis. Find co-ords of B.

B(−5√3, 5) B is a 150° angle in S.P.

C is a reflection of B over the x-axis. Find co-ords of C.

C(−5√3, −5) C is a 210° angle in S.P.

D is a reflection of A over x-axis. Find co-ords of D.

D(5√3, −5) D is a 330° angle in S.P.

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#8-13, 15, 17
Extend #20