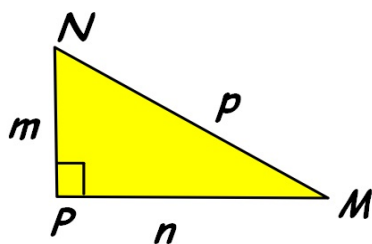


13-1 Right Triangle Trigonometry and Special Triangles

April 23

Six trigonometric functions defined:



$$\sin M = \frac{m}{p}$$

$$\cos M = \frac{n}{p}$$

$$\tan M = \frac{m}{n}$$

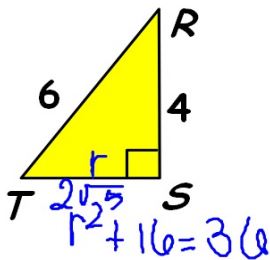
reciprocal functions:

$$\text{cosecant} \rightarrow \csc M = \frac{p}{m}$$

$$\text{secant} \rightarrow \sec M = \frac{p}{n}$$

$$\text{cotangent} \rightarrow \cot M = \frac{n}{m}$$

1 Evaluate the 6 trig functions of angle R .



$$\sin R = \frac{2\sqrt{5}}{6} = \frac{\sqrt{5}}{3}$$

$$\cos R = \frac{2}{3}$$

$$\tan R = \frac{2\sqrt{5}}{4} = \frac{\sqrt{5}}{2}$$

$$\csc R = \frac{3}{\sqrt{5}} = \frac{3\sqrt{5}}{5}$$

$$\sec R = \frac{3}{2}$$

$$\cot R = \frac{2}{\sqrt{5}} = \frac{2\sqrt{5}}{5}$$

2 Use a calculator. Round to 4 decimal places.

csc 52°

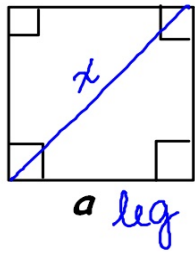
$$\frac{1}{\sin 52^\circ} \approx 1.2690$$

cot 85°

$$\frac{1}{\tan 85^\circ} \approx .0875$$

$$\frac{1}{x} \text{ or } x^{-1}$$

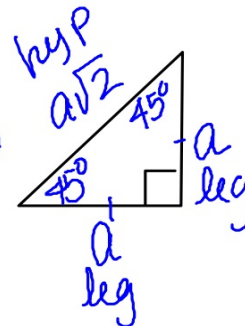
Special Right Triangles



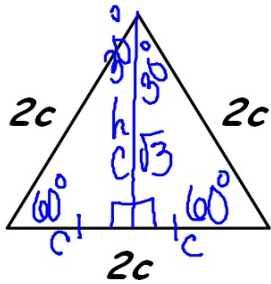
$$x^2 = a^2 + a^2$$

$$\sqrt{x^2} = \sqrt{2a^2}$$

$$x = a\sqrt{2}$$



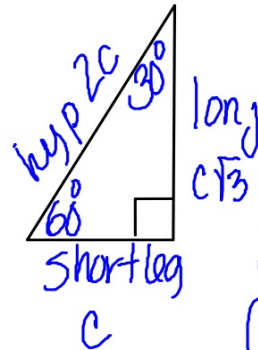
Isosceles
RT Δ
45:45:90 Δ
1:1: $\sqrt{2}$



$$h^2 + c^2 = 4c^2$$

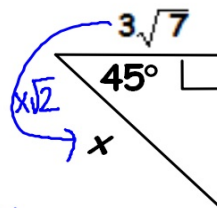
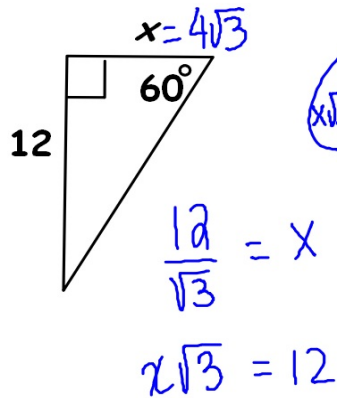
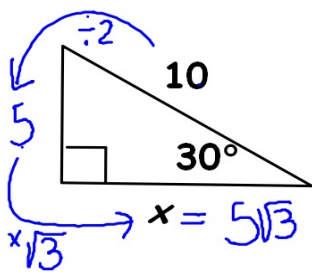
$$\sqrt{h^2} = \sqrt{3c^2}$$

$$h = c\sqrt{3}$$

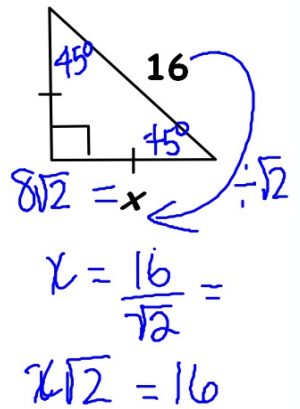


30-60-90 Δ
1: $\sqrt{3}$:2

3 Find exact value of x (no calculator).

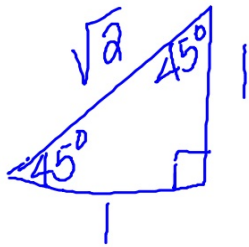


Handwritten equation: $x = 3\sqrt{14}$



4 Find exact values. (no calculator)

Handwritten equation: $\cos 45^\circ = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$



Handwritten equation: $\csc 60^\circ = \frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$

