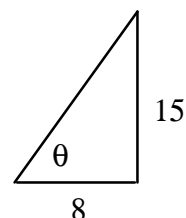
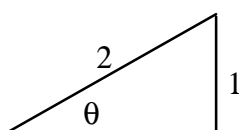
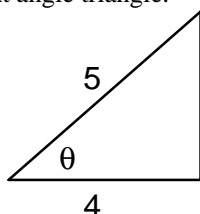


Tutorial 7: Trigonometry I: angles, solving triangles, inverse function, some basic identities.

1. Find the exact value of the six trigonometric functions of the angle θ given in the accompanying figure. Each triangle is a right angle triangle.



2. Sketch a right triangle corresponding to the trigonometric function of the acute angle θ . Use the Pythagorean theorem to find the length of the third side.

(i) $\sin \theta = 2/3$

(ii) $\sec \theta = 2$

(iii) $\tan \theta = 3$

3. Use the given functional values and trig identities to find the following trig values.

(a) $\sin 60^\circ = \frac{\sqrt{3}}{2}$, $\cos 60^\circ = \frac{1}{2}$

(b) $\sec \theta = 5$, $\tan \theta = 2\sqrt{6}$

(i) $\tan 60^\circ$

(i) $\cos \theta$

(ii) $\sin 30^\circ$

(ii) $\cot \theta$

(iii) $\cos 30^\circ$

(iii) $\cot(90^\circ - \theta)$

(iv) $\cot 60^\circ$

(iv) $\sin \theta$

4. Evaluate the trig function by memory or by constructing an appropriate triangle for the special angle.

(i) $\tan 30^\circ$

(iii) $\csc 60^\circ$

(ii) $\sin 45^\circ$

(iv) $\sec 30^\circ$

5. For each of the following find the value of θ in degrees without the aid of a calculator.

(i) $\sin \theta = 1/2$

(iv) $\sin \theta = \frac{\sqrt{2}}{2}$

(ii) $\tan \theta = 1$

(iii) $\sec \theta = 2$

6. Find the value of θ in degrees using the inverse key on your calculator

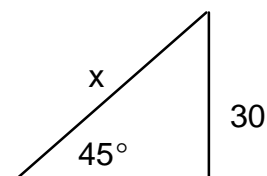
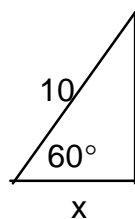
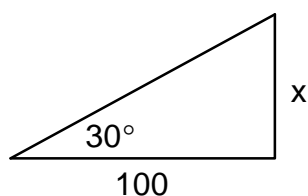
(i) $\sin \theta = 0.8191$

(iii) $\tan \theta = 1.1920$

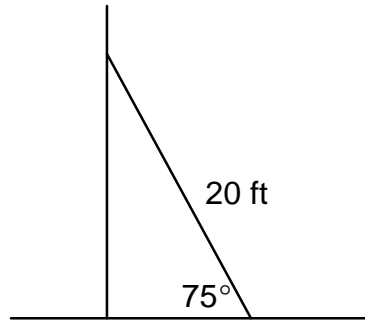
(ii) $\cos \theta = 0.8746$

(iv) $\sin \theta = 0.3746$

7. Solve for x in each triangle.



8. A 20 foot ladder leaning against the side of a house makes a 75° angle with the ground. How far up the side of the house does the ladder reach ?



9. A 6 foot man standing 12 feet from a streetlight casts an 8 foot shadow. What is the height h of the streetlight ? What angle θ does the line from the light to the end of his shadow make with the ground ?

