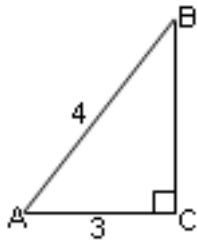


Math 26 Section 1

Quiz 3 Solutions

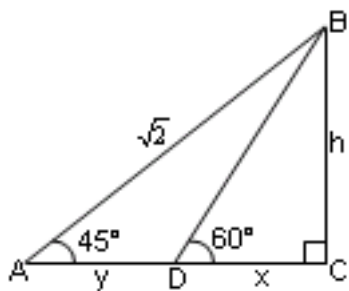
1. (3 points) For the triangle below, find $\sin B$, $\cos B$, and $\tan B$.



From the Pythagorean theorem, $3^2 + a^2 = 4^2$, thus $a = \sqrt{16 - 9} = \sqrt{7}$.

Thus $\sin B = \frac{b}{c} = \frac{3}{4}$, $\cos B = \frac{a}{c} = \frac{\sqrt{7}}{4}$, and $\tan B = \frac{b}{a} = \frac{3}{\sqrt{7}}$.

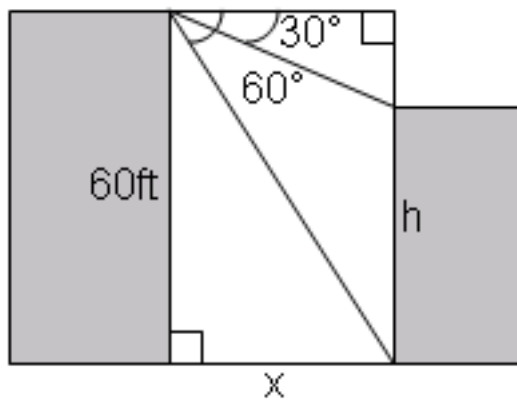
2. (3 points) Using the information in the diagram, find x .



$$\sin 45^\circ = \frac{h}{\sqrt{2}}, \text{ so } h = \sqrt{2} \sin 45^\circ = 1.$$

$$\tan 60^\circ = \frac{h}{x}, \text{ so } x = \frac{h}{\tan 60^\circ} = \frac{1}{\sqrt{3}}.$$

3. (4 points) A man standing on the roof of a building 60ft high looks down to the building next door. He finds the angle of depression to the roof of that building from the roof of his building to be 30° , while the angle of depression from the roof of his building to the bottom of the building next door is 60° . How tall is the building next door?



$$x = (60\text{ft}) \tan 30^\circ = \frac{60}{\sqrt{3}}\text{ft}$$

$$60\text{ft} - h = x \tan 60^\circ = \frac{60}{\sqrt{3}}\text{ft} \frac{1}{\sqrt{3}} = 20\text{ft}$$

$$\text{Thus, } h = 60\text{ft} - 20\text{ft} = 40\text{ft}.$$