

9.1 Find the values of the other five trigonometric functions of θ .

a. $\sec \theta = \frac{12}{5} = \frac{\text{hyp}}{\text{adj}}$
 \cos

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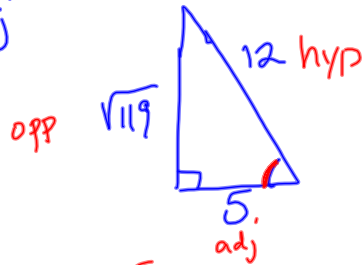
$$a^2 + b^2 = c^2$$

$$5^2 + b^2 = 12^2$$

$$25 + b^2 = 144$$

$$b^2 = 119$$

$$b = \sqrt{119}$$



$$\cos \theta = \frac{5}{12}$$

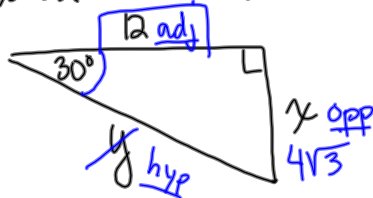
$$\sin \theta = \frac{O}{H} = \frac{\sqrt{119}}{12}$$

$$\csc \theta = \frac{12}{\sqrt{119}} \cdot \frac{\sqrt{119}}{\sqrt{119}} = \frac{12\sqrt{119}}{119}$$

$$\tan \theta = \frac{\text{opp}}{\text{adj}} = \frac{\sqrt{119}}{5}$$

$$\cot \theta = \frac{5}{\sqrt{119}} = \frac{5\sqrt{119}}{119}$$

Find the exact values of x and y .



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

$$\tan 30^\circ = \frac{x}{12} \quad \cos 30^\circ = \frac{12}{y}$$

$$\frac{\sqrt{3}}{3} = \frac{x}{12} \quad \frac{\sqrt{3}}{2} = \frac{12}{y}$$

$$\frac{12\sqrt{3}}{3} = \frac{3x}{3} \quad \frac{y\sqrt{3}}{\sqrt{3}} = \frac{24}{\sqrt{3}}$$

$$4\sqrt{3} = x \quad y = \frac{24\sqrt{3}}{3}$$

$$y = 8\sqrt{3}$$

$$12^2 + (4\sqrt{3})^2 = y^2$$

$$144 + 4\sqrt{3} \cdot 4\sqrt{3} = y^2$$

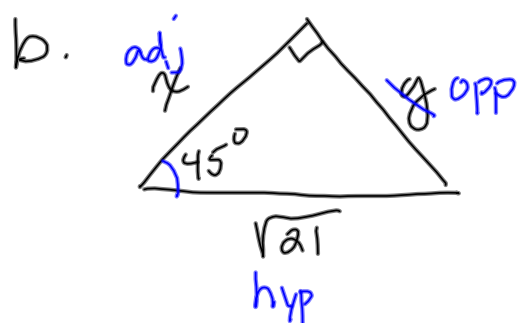
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$$144 + 48$$

$$\sqrt{192} = \sqrt{y^2}$$

$\sqrt{144 \cdot 48}$
 $\sqrt{96 \cdot 24}$
 $\sqrt{48 \cdot 12}$
 $\sqrt{24 \cdot 6}$

$$y = 8\sqrt{3}$$



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$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

$$\cos 45^\circ = \frac{\text{adj}}{\text{hyp}}$$

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

$$\frac{2x}{2} = \frac{\sqrt{42}}{2}$$

$$x = \frac{\sqrt{42}}{2} = y$$

Solve $\triangle ABC$.

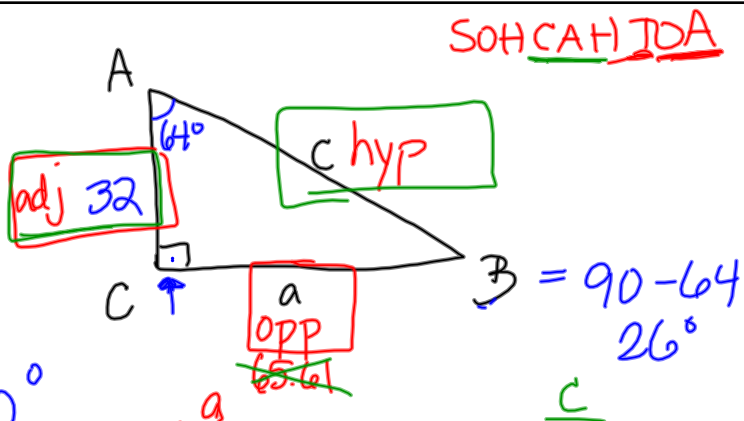
$A = 64^\circ$

$b = 32$

$B = 26^\circ \quad C = 90^\circ$

$a =$

$c =$



$\tan \theta = \frac{\text{opp}}{\text{adj}}$

$32 \cdot \tan 64^\circ = \frac{a}{32} \cdot 32$

$32 \tan 64^\circ = a$

$65.61 \approx a$

$\cos \theta = \frac{\text{adj}}{\text{hyp}}$

$\cos 64^\circ = \frac{32}{c}$

$\frac{c \cdot \cos 64^\circ}{\cos 64^\circ} = \frac{32}{\cos 64^\circ}$

$c = \frac{32}{\cos 64^\circ}$

0

adj
25,000

65°

d hyp

15°

25°

y

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$\cos \theta = \frac{\text{adj}}{\text{hyp}}$

$\cos 65^\circ = \frac{25,000}{d}$

$d = \frac{25,000}{\cos 65^\circ}$

$d = 59,155 \text{ ft}$