

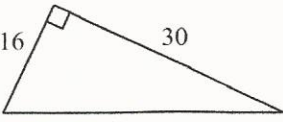
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Unit 11 Test Review on Trigonometry

39 pt

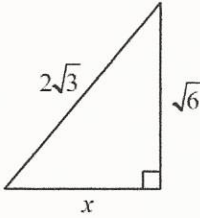
Find the length of the missing side of each triangle. Leave you answers in the simplest radical form (simplified roots or "prison story").

1. 

$$\sqrt{16^2 + 30^2} = \sqrt{x^2}$$

$$\sqrt{1156} = x$$

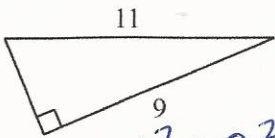
+1 $x = 34$

2. 

$$x^2 + \sqrt{6}^2 = (2\sqrt{3})^2$$

$$x^2 = \sqrt{(2\sqrt{3})^2 - \sqrt{6}^2}$$

+1 $x = \sqrt{6}$

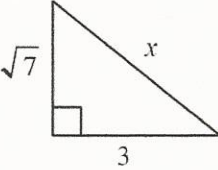
3. 

$$x^2 + 9^2 = 11^2$$

$$\sqrt{x^2} = \sqrt{11^2 - 9^2}$$

$$x = \sqrt{40}$$

+1 $x = 2\sqrt{10}$

4. 

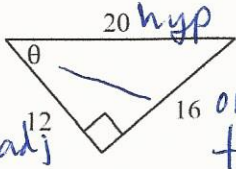
$$\sqrt{7^2 + 3^2} = \sqrt{x^2}$$

$$\sqrt{16} = x$$

+1 $x = 4$

Find the value of the requested trigonometric function. Write exact answers (simplified fractions with simplified roots).

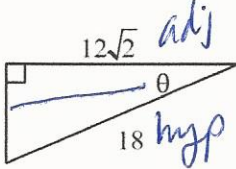
5. $\tan \theta = \frac{o}{a}$



$$\tan \theta = \frac{16}{12}$$

+1 $\tan \theta = \frac{4}{3}$

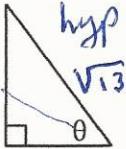
6. $\sin \theta = \frac{o}{h}$



$$\sin \theta = \frac{6}{18}$$

+1 $\sin \theta = \frac{1}{3}$

7. $\cos \theta = \frac{a}{h}$

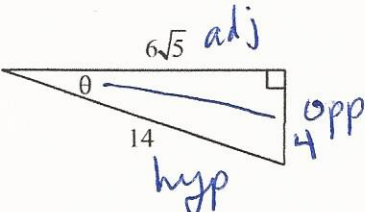


$$\sqrt{2^2 + 3^2} = \sqrt{x^2}$$

$$\sqrt{13} = x$$

+1 $\cos \theta = \frac{2}{\sqrt{13}}$

8. $\sin \theta = \frac{o}{h}$



$$(6\sqrt{5})^2 + x^2 = 14^2$$

$$x^2 = \sqrt{14^2 - (6\sqrt{5})^2}$$

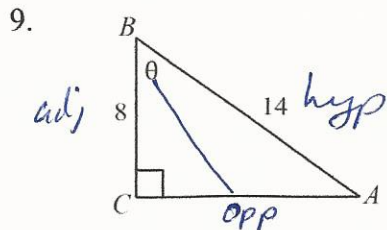
$$x = \sqrt{16}$$

$$x = 4$$

$$\sin \theta = \frac{4}{14}$$

+1 $\sin \theta = \frac{2}{7}$

Find the measure of each angle indicated. Round your answers to the nearest tenth of a degree.

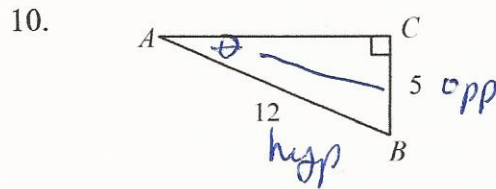


$$\cos \theta = \frac{a}{h}$$

$$\cos \theta = \frac{8}{14}$$

$$\cos^{-1}\left(\frac{8}{14}\right) = \theta$$

$$\theta \approx 55.2^\circ + 1$$

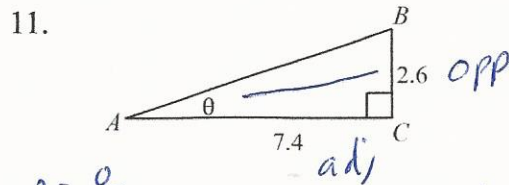


$$\sin \theta = \frac{o}{h}$$

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

$$\sin^{-1}\left(\frac{5}{12}\right) = \theta$$

$$\theta \approx 24.6^\circ + 1$$

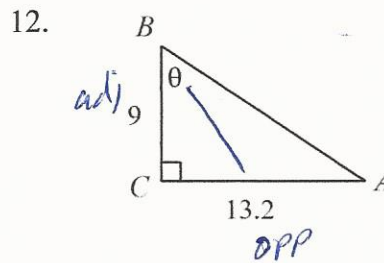


$$\tan \theta = \frac{o}{a}$$

$$\tan \theta = \frac{2.6}{7.4}$$

$$\tan^{-1}\left(\frac{2.6}{7.4}\right) = \theta$$

$$\theta \approx 19.4^\circ + 1$$



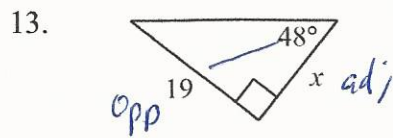
$$\tan \theta = \frac{o}{a}$$

$$\tan \theta = \frac{13.2}{9}$$

$$\tan^{-1}\left(\frac{13.2}{9}\right) = \theta$$

$$\theta \approx 55.7^\circ + 1$$

Write an equation involving sine, cosine, or tangent that can be used to find the missing side length. Then solve the equation. Round your answers to the nearest tenth.

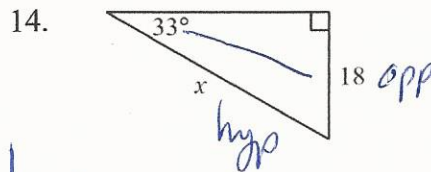


$$\tan \theta = \frac{o}{a}$$

$$\tan 48^\circ = \frac{19}{x}$$

$$\frac{x \tan 48^\circ}{\tan 48^\circ} = \frac{19}{\tan 48^\circ}$$

$$x \approx 17.1 + 1$$

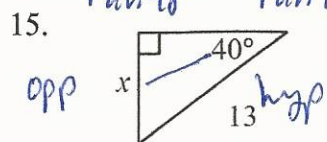


$$\sin \theta = \frac{o}{h}$$

$$\sin 33^\circ = \frac{18}{x}$$

$$\frac{x \sin 33^\circ}{\sin 33^\circ} = \frac{18}{\sin 33^\circ}$$

$$x \approx 33.0 + 1$$



$$\sin \theta = \frac{o}{h}$$

$$\left(\sin 40^\circ = \frac{x}{13}\right) 13$$

$$x \approx 8.4 + 1$$

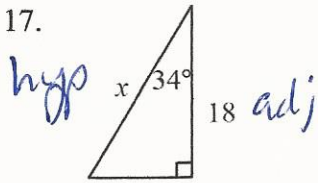


$$\tan \theta = \frac{o}{a}$$

$$\left(\tan 25^\circ = \frac{x}{11}\right) 11$$

$$x \approx 5.1 + 1$$

17.



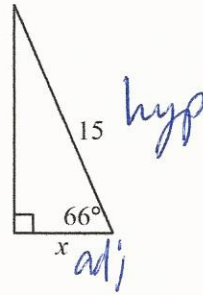
$$\cos \theta = \frac{a}{h}$$

$$\cos 34^\circ = \frac{18}{x}$$

$$\frac{x \cos 34^\circ}{\cos 34^\circ} = \frac{18}{\cos 34^\circ}$$

$$x \approx 21.7 + 1$$

18.



$$\cos \theta = \frac{a}{h}$$

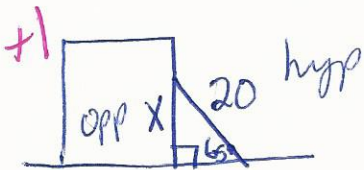
$$\cos 66^\circ = \frac{x}{15}$$

$$x \approx 6.1 + 1$$

Draw a diagram to help you solve each problem. Define a variable. Then write an equation and give your answers to the nearest tenth. Don't forget to include the correct units.

19. A 20-ft. ladder is leaning against a building. It makes a 65° angle with the ground. How far up the building does the ladder reach?

$x = \text{height ladder is on building} + 1$

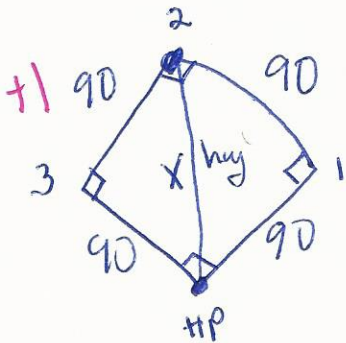


$$\sin \theta = \frac{o}{h}$$

$$\left(\sin 65^\circ = \frac{x}{20} \right) 20$$

$$x \approx 18.1 \text{ ft} + 1$$

20. A baseball diamond is a square with sides length of 90 ft. The catcher attempts to catch a runner stealing by throwing from home plate to second base. How long is the throw?



$x = \text{distance from home plate to second base} + 1$

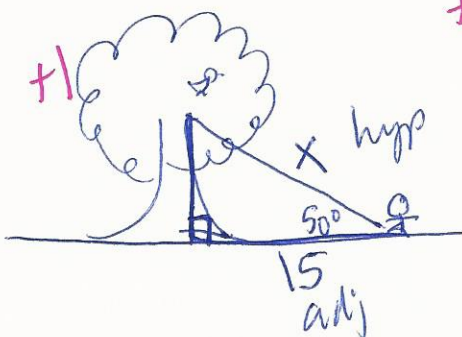
$$\sqrt{90^2 + 90^2} = \sqrt{x^2}$$

$$\sqrt{16200} = x$$

$$x \approx 127.3 \text{ ft} + 1$$

21. A photographer wishes to take a picture of a bird in a tree. She is 15 feet from the base of the tree and is shooting the picture at a 50° angle of elevation. How far is the camera from the bird?

$x = \text{distance from bird to camera} + 1$



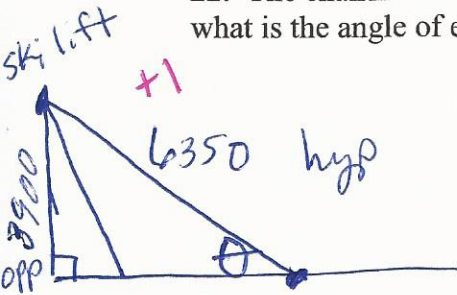
$$\cos \theta = \frac{a}{h}$$

$$\cos 50^\circ = \frac{15}{x}$$

$$\frac{x \cos 50^\circ}{\cos 50^\circ} = \frac{15}{\cos 50^\circ}$$

$$x \approx 23.3 \text{ ft} + 1$$

22. The chairlift at a ski resort has a vertical rise of 3900 ft. If the length of the ride is 6350 ft., what is the angle of elevation of the lift?



+1 $x = \text{angle of elevation of lift}$

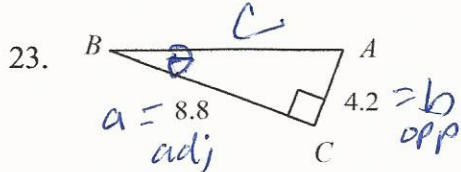
$$\sin \theta = \frac{o}{h}$$

$$\sin \theta = \frac{3900}{6350}$$

$$\sin^{-1}\left(\frac{3900}{6350}\right) = \theta$$

$$\theta \approx 37.9^\circ$$

Solve each triangle. Remember to label all missing pieces and show all work. Round answers to the nearest tenth.



$$m\angle A = 64.5^\circ \quad a = 4.2$$

$$m\angle B = 25.5^\circ \quad b = 8.8$$

$$m\angle C = 90^\circ \quad c = 9.8$$

$$\sqrt{4.2^2 + 8.8^2} = \sqrt{c^2}$$

$$\sqrt{95.08} = c$$

$$c \approx 9.8 +1$$

$$180^\circ - 90^\circ - 25.5^\circ = \angle A$$

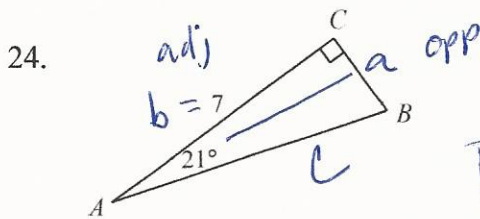
$$m\angle A \approx 64.5^\circ +1$$

$$\tan \theta = \frac{o}{a}$$

$$\tan B = \frac{4.2}{8.8}$$

$$\tan^{-1}\left(\frac{4.2}{8.8}\right) = B$$

$$B \approx 25.5^\circ +1$$



$$m\angle A = 21^\circ \quad a = 2.7$$

$$m\angle B = 69^\circ \quad b = 7$$

$$m\angle C = 90^\circ \quad c = 7.5$$

$$180^\circ - 90^\circ - 21^\circ = \angle B$$

$$m\angle B = 69^\circ +1$$

$$\sqrt{2.7^2 + 7^2} = \sqrt{c^2}$$

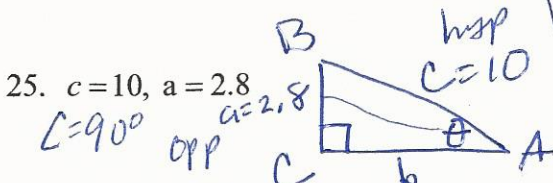
$$\sqrt{56.29} = c$$

$$c \approx 7.5 +1$$

$$\tan \theta = \frac{o}{a}$$

$$\left(\tan 21^\circ = \frac{a}{7}\right) 7$$

$$a \approx 2.7 +1$$



$$m\angle A = 16.3^\circ \quad a = 2.8$$

$$m\angle B = 73.7^\circ \quad b = 9.6$$

$$m\angle C = 90^\circ \quad c = 10$$

$$2.8^2 + b^2 = 10^2$$

$$\sqrt{b^2} = \sqrt{10^2 - 2.8^2}$$

$$b = \sqrt{92.16}$$

$$b \approx 9.6 +1$$

$$180^\circ - 90^\circ - 16.3^\circ = \angle B$$

$$m\angle B \approx 73.7^\circ +1$$

$$\sin \theta = \frac{o}{h}$$

$$\sin A = \frac{2.8}{10}$$

$$\sin^{-1}\left(\frac{2.8}{10}\right) = A$$

$$A \approx 16.3^\circ +1$$