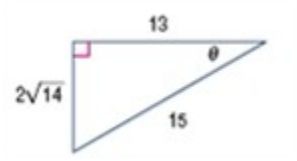
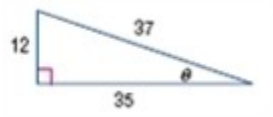
4-1 Right Triangle Trigonometry

Find the exact values of the six trigonometric functions of θ.

2. 

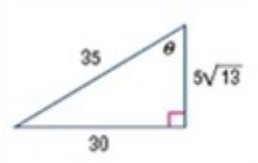
ANSWER:

$\sin\theta = \frac{2\sqrt{14}}{15}$, $\cos\theta = \frac{13}{15}$, $\tan\theta = \frac{2\sqrt{14}}{13}$, $\csc\theta = \frac{15\sqrt{14}}{28}$, $\sec\theta = \frac{15}{13}$, $\cot\theta = \frac{13\sqrt{14}}{28}$

4. 

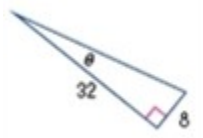
ANSWER:

$\sin\theta = \frac{12}{37}$, $\cos\theta = \frac{35}{37}$, $\tan\theta = \frac{12}{35}$, $\csc\theta = \frac{37}{12}$, $\sec\theta = \frac{37}{35}$, $\cot\theta = \frac{35}{12}$

6. 

ANSWER:

$\sin\theta = \frac{6}{7}$, $\cos\theta = \frac{\sqrt{13}}{7}$, $\tan\theta = \frac{6\sqrt{13}}{13}$, $\csc\theta = \frac{7}{6}$, $\sec\theta = \frac{7\sqrt{13}}{13}$, $\cot\theta = \frac{\sqrt{13}}{6}$

8. 

ANSWER:

$\sin\theta = \frac{\sqrt{17}}{17}$, $\cos\theta = \frac{4\sqrt{17}}{17}$, $\tan\theta = \frac{1}{4}$, $\csc\theta = \sqrt{17}$, $\sec\theta = \frac{\sqrt{17}}{4}$, $\cot\theta = 4$

Use the given trigonometric function value of the acute angle θ to find the exact values of the five remaining trigonometric function values of θ.

10. $\cos\theta = \frac{6}{7}$

ANSWER:

$\sin\theta = \frac{\sqrt{13}}{7}$, $\tan\theta = \frac{\sqrt{13}}{6}$, $\csc\theta = \frac{7\sqrt{13}}{13}$, $\sec\theta = \frac{7}{6}$, $\cot\theta = \frac{6\sqrt{13}}{13}$

12. $\sec\theta = 8$

ANSWER:

$\sin\theta = \frac{3\sqrt{7}}{8}$, $\cos\theta = \frac{1}{8}$, $\tan\theta = 3\sqrt{7}$, $\csc\theta = \frac{8\sqrt{7}}{21}$, $\cot\theta = \frac{\sqrt{7}}{21}$

14. $\tan\theta = \frac{1}{4}$

ANSWER:

$\sin\theta = \frac{\sqrt{17}}{17}$, $\cos\theta = \frac{4\sqrt{17}}{17}$, $\csc\theta = \sqrt{17}$, $\sec\theta = \frac{\sqrt{17}}{4}$, $\cot\theta = 4$

16. $\csc\theta = 6$

ANSWER:

$\sin\theta = \frac{1}{6}$, $\cos\theta = \frac{\sqrt{35}}{6}$, $\tan\theta = \frac{\sqrt{35}}{35}$, $\sec\theta = \frac{6\sqrt{35}}{35}$, $\cot\theta = \sqrt{35}$

18. $\sin\theta = \frac{8}{13}$

ANSWER:

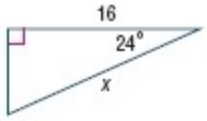
$\cos\theta = \frac{\sqrt{105}}{13}$, $\tan\theta = \frac{8\sqrt{105}}{105}$, $\csc\theta = \frac{13}{8}$, $\sec\theta = \frac{13\sqrt{105}}{105}$, $\cot\theta = \frac{\sqrt{105}}{8}$

Find the value of *x*. Round to the nearest tenth, if necessary.

20. 

ANSWER:

6.5

22. 

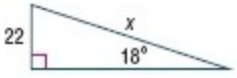
ANSWER:

17.5

24. 

ANSWER:

22.2

26. 

ANSWER:

71.2

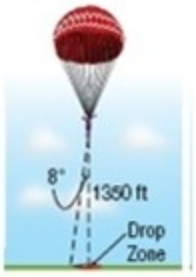
28. **SNOWBOARDING** Brad built a snowboarding ramp with a height of 3.5 feet and an 18º incline.
a. Draw a diagram to represent the situation.
b. Determine the length of the ramp.

ANSWER:

a.

b. 11.3 ft

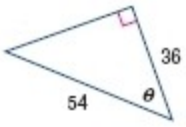
30. **PARACHUTING** A paratrooper encounters stronger winds than anticipated while parachuting from 1350 feet, causing him to drift at an 8º angle. How far from the drop zone will the paratrooper land?



ANSWER:

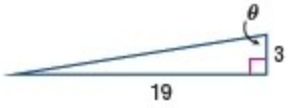
190 ft

Find the measure of angle θ. Round to the nearest degree, if necessary.

32. 

ANSWER:

48º

34. 

ANSWER:

81º

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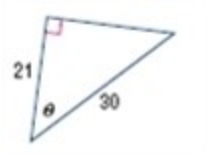
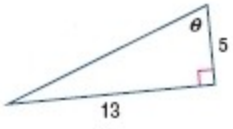
36. 

ANSWER:
46°

38. 

ANSWER:
69°