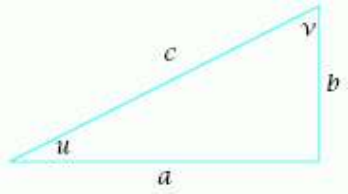
1. *Chapter 4, Section 4.5, Question 020a

Use the right triangle below. This triangle is not drawn to scale corresponding to the given data.



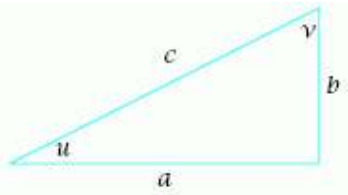
Suppose $\sin v = \frac{3}{19}$. Evaluate $\cos u$.

Enter the exact answer in fraction form.

$\cos u =$

2. *Chapter 4, Section 4.5, Question 002a

Use the right triangle below. This triangle is not drawn to scale corresponding to the given data.



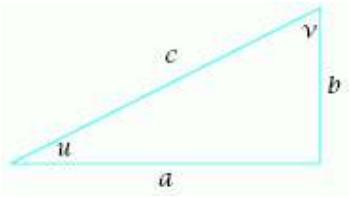
Suppose $a = 5$ and $b = 8$. Evaluate c.

Enter the exact answer.

$c =$

3. *Chapter 4, Section 4.5, Question 002c

Use the right triangle below. This triangle is not drawn to scale corresponding to the given data.



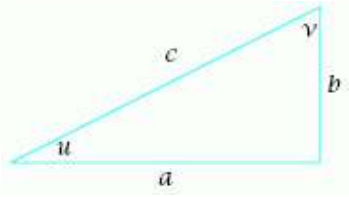
Suppose $a = 7$ and $b = 8$. Evaluate $\sin u$.

Enter the exact answer.

$\sin u =$

4. *Chapter 4, Section 4.5, Question 004g

Use the right triangle below. This triangle is not drawn to scale corresponding to the given data.



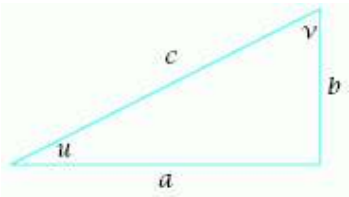
Suppose $b = 8$ and $c = 14$. Evaluate $\tan v$.

Enter the exact answer.

$\tan v =$

5. *Chapter 4, Section 4.5, Question 006b

Use the right triangle below. This triangle is not drawn to scale corresponding to the given data.



Suppose $b = 8$ and $v = 39°$. Evaluate c.

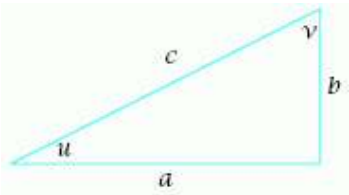
Round your answer to two decimal places.

$c =$ **10.29** *1

Significant digits not applicable; the absolute tolerance is +/-0.01

6. *Chapter 4, Section 4.5, Question 014a

Use the right triangle below. This triangle is not drawn to scale corresponding to the given data.



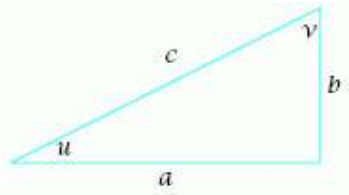
Suppose $c = 3$ and $\cos u = \frac{4}{5}$. Evaluate a.

Enter the exact answer.

$a =$

7. *Chapter 4, Section 4.5, Question 016b

Use the right triangle below. This triangle is not drawn to scale corresponding to the given data.



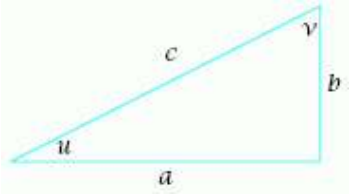
Suppose $\cos u = \frac{8}{9}$. Evaluate $\tan u$.

Enter the exact answer.

$\tan u =$

8. *Chapter 4, Section 4.5, Question 018a

Use the right triangle below. This triangle is not drawn to scale corresponding to the given data.



Suppose $b = 2$ and Evaluate

Enter the exact answer.

9. *Chapter 4, Section 4.5, Question 039

Find the lengths of all three sides of a right triangle that has perimeter and has a angle.

Round your answers to three decimal places and enter them in increasing order.

8.338 *1

11.476 *2

14.186 *3

*1 - significant digits not applicable; the absolute tolerance is +/-0.001
*2 - significant digits not applicable; the absolute tolerance is +/-0.001
*3 - significant digits not applicable; the absolute tolerance is +/-0.001

10. Chapter 4, Section 4.6, Question 009

Given that

,

find the exact expression for the indicated quantity.

11. Chapter 4, Section 4.6, Question 014

Given that

,

find the exact expression for the indicated quantity.

Rationalize your answer.

12. Chapter 4, Section 4.6, Question 026

Given that

,

find the exact expression for the indicated quantity.

Rationalize your answer.

13. *Chapter 4, Section 4.6, Question 043

Suppose is in the interval with

Find the exact expression for the indicated quantity.

18

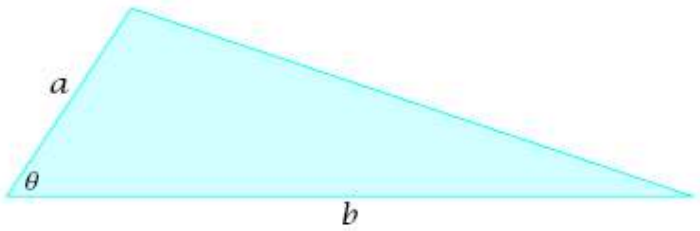
14. *Chapter 4, Section 4.6, Question 054

Suppose is in the interval , with .

Find the exact expression for the indicated quantity.

15. *Chapter 5, Section 5.3, Question 006

Use the following figure (which is not drawn to scale):

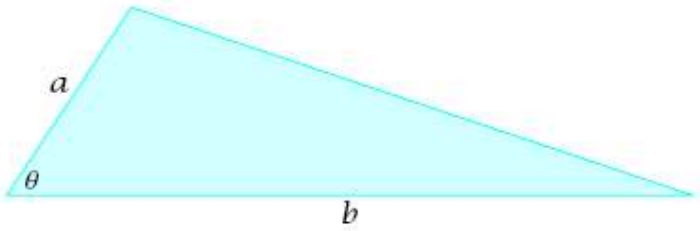


Find the value of if , , and the area of the triangle equals .

Enter an exact answer.

16. *Chapter 5, Section 5.3, Question 010

Use the following figure (which is not drawn to scale):



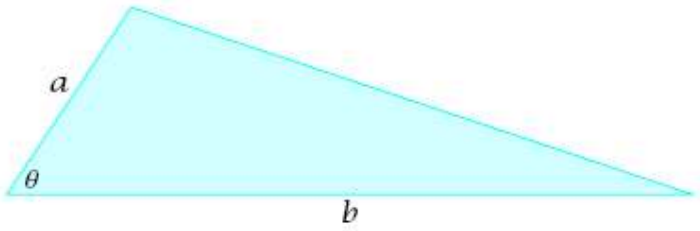
Find the value of (in radians) if , , the area of the triangle equals , and .
Round your answer to four decimal places.

0.2815 *1 radians

Significant digits not applicable; the absolute tolerance is +/-0.0001

17. *Chapter 5, Section 5.3, Question 012

Use the following figure (which is not drawn to scale):



Find the value of (in degrees) if , , the area of the triangle equals , and .

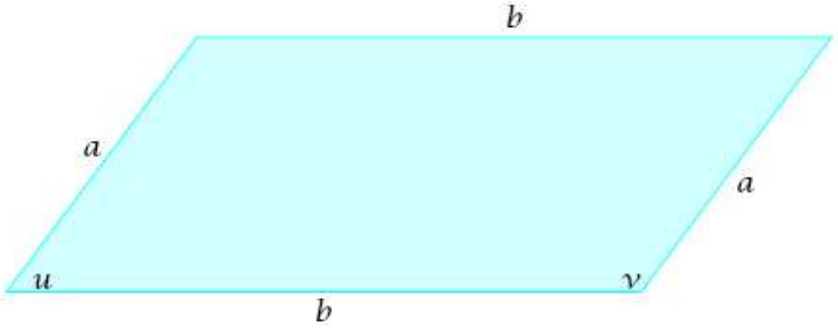
Round your answer to two decimal places.

155.68 *1 degrees

Significant digits not applicable; the absolute tolerance is +/-0.01

18. *Chapter 5, Section 5.3, Question 017

Use the following figure (which is not drawn to scale except that is indeed meant to be an acute angle and is indeed meant to be an obtuse angle):

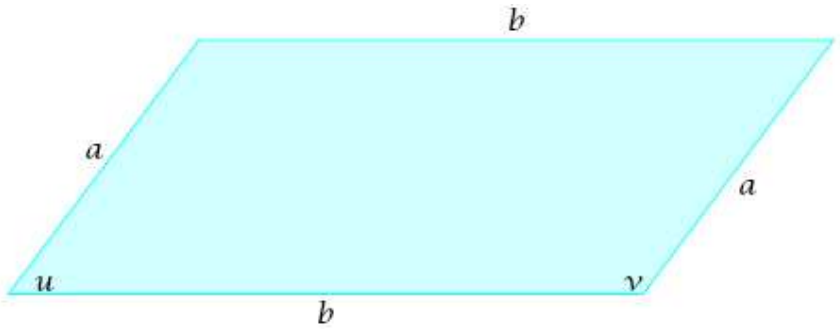


Find the value of if , , and the area of the parallelogram equals .

Enter an exact answer.

19. *Chapter 5, Section 5.3, Question 021

Use the following figure (which is not drawn to scale except that is indeed meant to be an acute angle and is indeed meant to be an obtuse angle):



Find the value of (in radians) if , , and the area of the parallelogram equals .

Round your answer to four decimal places.

0.1139 *1 radians

Significant digits not applicable; the absolute tolerance is +/-0.0001

20. Chapter 5, Section 5.3, Question 040

The -pence coin in Great Britain is a regular -sided polygon (the edges are actually slightly curved, but ignore that small curvature for this exercise). The distance from the center of the face of this coin to a vertex is centimeters. Find the area of a face of a British -pence coin.

Round your answer to three decimal places.

Area **5.363** *1 square centimeters

Significant digits not applicable; the absolute tolerance is +/-0.001

21. Chapter 5, Section 5.4, Question 024

Radio transmissions show observers in Houston that the International Space Station is miles away, the Chinese space station Tiangong is miles away and the angle International Space Station-Houston-Tiangong is . How far apart are the two stations?

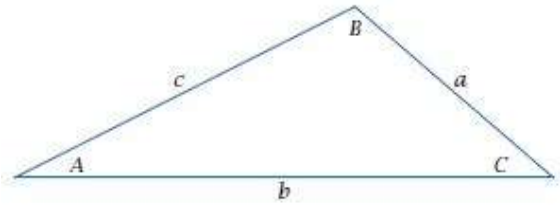
Round your answer to the nearest mile.

The two stations are approximately **644** *1 miles apart.

Significant digits not applicable; the absolute tolerance is +/-1

22. *Chapter 5, Section 5.4, Question 006

Suppose , and . Use the following figure (which is not drawn to scale) to evaluate , , and .



Evaluate angles in both degrees and radians. For radians, round your answers to three decimal places. Otherwise, round your answers to one decimal place.

(a) **31.6** *1 degrees

0.551 *2 radians

(b) **38.9** *3 degrees

0.680 *4 radians

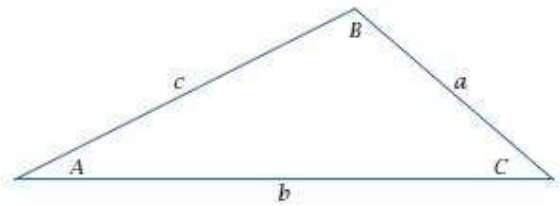
(c) **109.5** *5 degrees

1.911 *6 radians

*1 - significant digits not applicable; the absolute tolerance is +/-0.2
*2 - significant digits not applicable; the absolute tolerance is +/-0.002
*3 - significant digits not applicable; the absolute tolerance is +/-0.2
*4 - significant digits not applicable; the absolute tolerance is +/-0.002
*5 - significant digits not applicable; the absolute tolerance is +/-0.2
*6 - significant digits not applicable; the absolute tolerance is +/-0.002

23. *Chapter 5, Section 5.4, Question 010

Suppose , and . Use the following figure (which is not drawn to scale) to evaluate , , and .



Evaluate angles in both degrees and radians. Round length and radian measurements to three decimal places. Otherwise, round your answers to one decimal place.

(a) **4.415** *1

(b) **47.7** *2 degrees

0.833 *3 radians

(c)

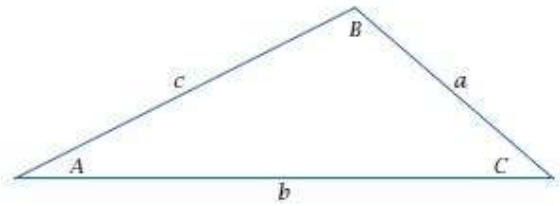
99.3 *4 degrees

1.733 *5 radians

*1 - significant digits not applicable; the absolute tolerance is +/-0.002
*2 - significant digits not applicable; the absolute tolerance is +/-0.2
*3 - significant digits not applicable; the absolute tolerance is +/-0.002
*4 - significant digits not applicable; the absolute tolerance is +/-0.2
*5 - significant digits not applicable; the absolute tolerance is +/-0.002

24. *Chapter 5, Section 5.4, Question 002

Suppose $a = 6$, $B = 70°$ and $C = 65°$. Use the following figure (which is not drawn to scale) to evaluate A, b, and c.



Evaluate angles in both degrees and radians. Round your answers to three decimal places, where required.

(a) $A =$ 45 *1 degrees

$A \approx$ 0.785 *2 radians

(b) $b \approx$ 7.974 *3

(c) $c \approx$ 7.691 *4

*1 - significant digits not applicable; exact number, no tolerance
*2 - significant digits not applicable; the absolute tolerance is +/-0.001
*3 - significant digits not applicable; the absolute tolerance is +/-0.001
*4 - significant digits not applicable; the absolute tolerance is +/-0.001