

MCR3U – Unit 4 (Trigonometry) Test

Show all related work.

Name: _____

Include units if applicable.

16 K

11 T

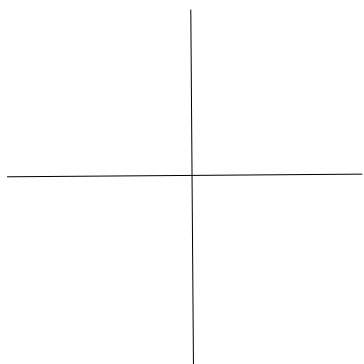
5 C

14 A

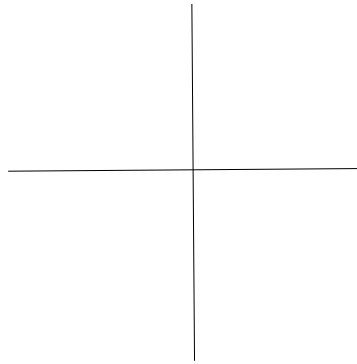
46 Total

1. Please give the **exact** trigonometric ratios that correspond to the following angles. Include a sketch of the angle!

a) $\tan 210^\circ =$

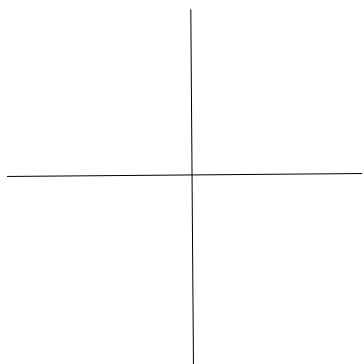


b) $\cos 315^\circ =$

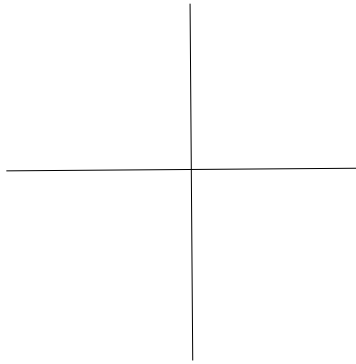


4 K

4 C c) $\sin 60^\circ =$



d) $\tan 120^\circ =$



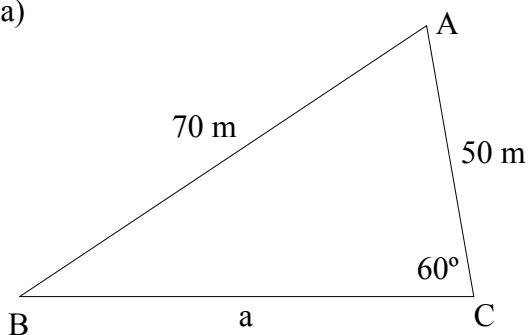
2. Explain how it's possible that $\sin 330^\circ$ and $\sin 210^\circ$ give identical exact trigonometric ratios.

1 C

2. Please solve the following triangles FULLY. That is, give values for each of the following angles and sides. Please show ALL of your work, and **don't forget UNITS**:

a)

5 K



Angle A:

Angle B:

Side Length a:

b) $\triangle ABC$ where $a = 15$ ft, $b = 7$ ft and $c = 10$ ft.

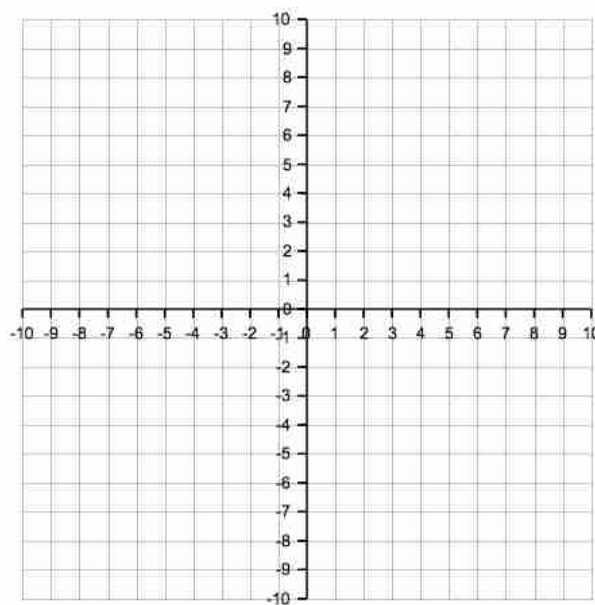
Angle A:

Angle B:

Angle C:

5 A

3. What are the exact trigonometric ratios for the angle (θ) represented by a terminal arm that goes through (-9 , -6)? [Please draw the terminal arm on the grid provided, and label the side lengths. Show any other work in the space below.]



$$\begin{array}{llll} \sin \theta = \boxed{} & \cos \theta = \boxed{} & \csc \theta = \boxed{} & \sec \theta = \boxed{} \\ \tan \theta = \boxed{} & & \cot \theta = \boxed{} & \end{array}$$

4. The green on a golf hole lies 500 yards directly **west** of the tee, with a water hazard in between the tee and the green. If a golfer's first shot travels 250 yards from the tee at an angle of 20° [to the north of west] and lands on the fairway, how far will the golfer have to hit the second shot from the fairway in order to land on the green? Include a diagram.



5. Solve **all** triangles that satisfy the given information. Be sure to show **how many** triangles can be formed.

a) $a = 35$ m, $b = 50$ m, and angle $A = 40^\circ$

9 A

b) $b = 52$ m, $a = 26$ m, and angle $A = 30^\circ$

c) $g = 74$ m, $f = 80$ m, and angle $G = 70^\circ$

6. Prove each of the following identities.

a) $\csc x \sec x \cos x \sin x = \sin^2 x + \cos^2 x$

$\overline{3 \text{ T}}$

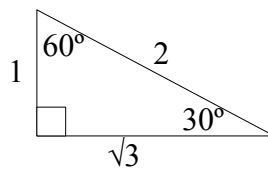
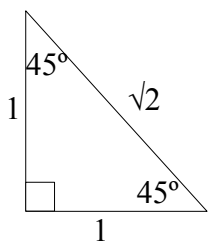
b) $\sin^2 x (\csc^2 x - 1) = \cos^2 x$

$\overline{4 \text{ T}}$

c) $\cot x \cos x = \csc x - \sin x$

$\overline{4 \text{ T}}$

Reference Material



$$\tan \theta = \frac{\sin \theta}{\cos \theta}$$

$$\sin^2 \theta + \cos^2 \theta = 1$$

$$\csc q = \frac{1}{\sin q}$$

$$\sec q = \frac{1}{\cos q}$$

$$\cot q = \frac{1}{\tan q}$$

$$c^2 = a^2 + b^2 - 2ab(\cos C)$$

$$\cos C = \frac{a^2 + b^2 - c^2}{2ab}$$

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

SOH CAH TOA