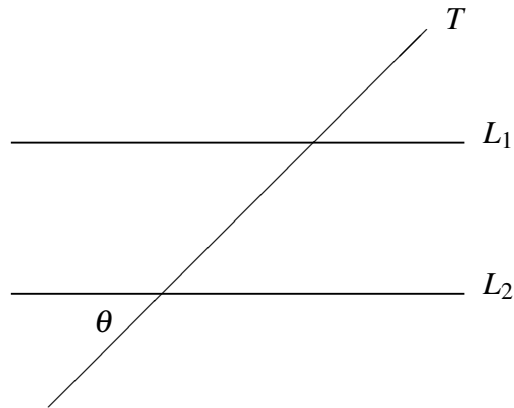

MATH 1321 Trigonometry, Fall 2013

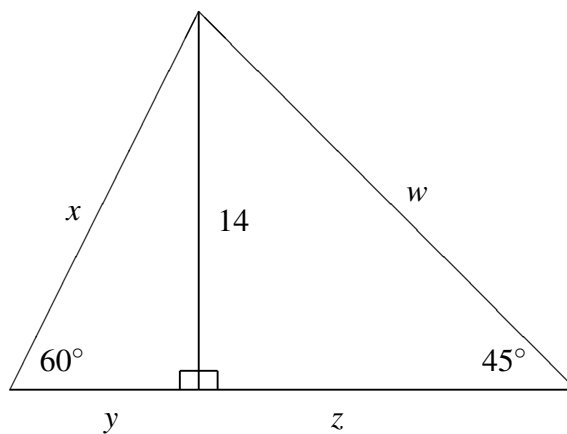
Section 20

Exam I - Tuesday 17 September 2013

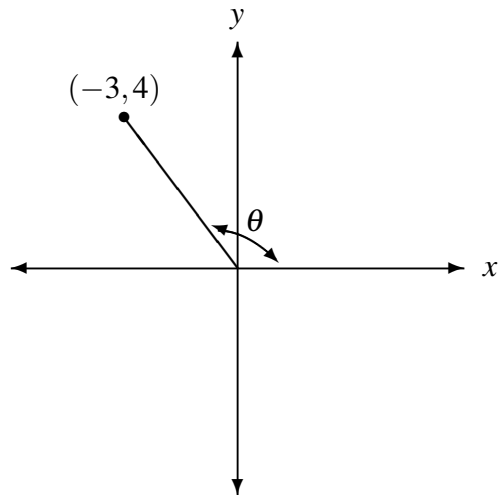
1. Reproduce the following diagram in your answerbook and mark with an 'x' **all** angles which are of equal measure to the angle marked θ . Give reasons for your answer. Note that L_1 and L_2 are parallel.



2. Determine the length of the sides x , y , z and w in the following diagram.



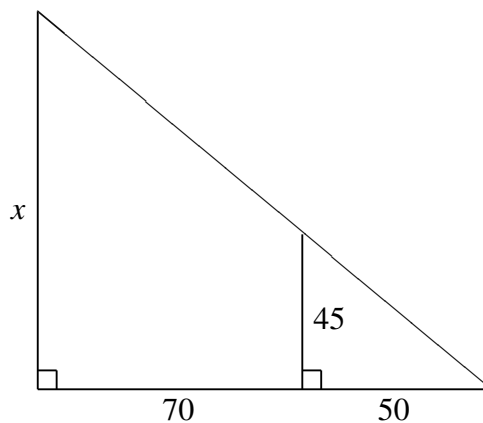
3. Determine the values of the 6 trigonometric functions evaluated at the angle θ from the following diagram.



4. Starting from the unit circle, prove the identity $1 + \tan^2 \theta = \sec^2 \theta$.

5. Determine the value of $\cot(-240^\circ)$.

6. Calculate the length of the side x in the following diagram.



7. Find all possible values for θ if $\tan \theta = 1$ and $0^\circ \leq \theta < 360^\circ$.

8. The angle of elevation from the top of a small building to the top of a nearby taller building is 60° and the angle of depression to the base of the taller building is 30° . If the shorter building is 100 ft tall what height is the taller building?
9. Adjacent sides of a rectangle are 6 and 8 inches long respectively. How long is any diagonal which joins opposite corners of the rectangle?
10. State whether the following statements are true or false.
- (a) Complementary angles sum to 180° .
 - (b) $\sec \theta > 0$ if θ is in the fourth quadrant.
 - (c) $\tan 90^\circ = 0$.
 - (d) $\csc 65^\circ < \csc 75^\circ$.
 - (e) $-1 < \sin \theta < 1$.