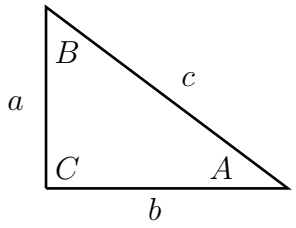
Mth 28, Homework 11 on section 5.4

Extra Credit

Due by Wed, Dec 10.

Write all your working out and answers neatly. Each exercise is worth 2 points.

Section 5.4 Right Triangle Trigonometry, Part II



$C = 90°$

(1) For a right triangle, labelled as in the diagram, suppose $\cos B = 2/5$ and side $c = 20$. Find the length of side a.

(2) For a right triangle, labelled as in the diagram, suppose $\tan A = 4/3$ and $b = 6$. Find the length of the hypotenuse c.

(Hint: use that tan is opp/adj to find a. Then use the Pythagorean theorem to find c.)

(3) For a right triangle, labelled as in the diagram, suppose $\sin A = 8/17$ and $a = 4$. Find

(a) c **(b)** b **(c)** $\tan A$ **(d)** $\csc B$

(4) With labels as in the diagram, suppose $A = 30°$ and $b = 15$. Find c exactly with a radical, not a decimal. (Remember $30°$ is a special angle.)

(5) With labels as in the diagram, suppose $B = 42°$ and $b = 8$. Find side a as a decimal correct to 4 places.

(6) You are standing 100 feet from the base of a tower. If the angle of elevation to the top is $70°$, compute the height of the tower to the nearest tenth of a foot.

(Hint: draw the right triangle diagram for this question, filling in the sides and angles you know. Let x be the height we're looking for. Use your calculator to find the relevant trig ratio. Solve for x to get the answer.)

(7) A ladder is 25 feet long and leaning against a building. The angle between the ground and the ladder is $80°$. Find how high the ladder reaches up the side of the building, correct to 2 decimal places.

(8) A climber looks down from the top of a hill and has a great view of the sea and a small beach. The angle of depression to the beach is $29°$. If the height of the hill is 520 meters, how far away from the climber is the beach, in a direct line?

(Hint: your answer should be a little more than a kilometer.)

If you get stuck on a question or aren't sure if you understand it:

- Go over the relevant class notes and section in the textbook.
- Check if you get the right answer for a similar odd-numbered question in the textbook (answers at the back of the book).
- Ask me about it after class.
- Come to my office hours: Mon 11:30 - 12:30, Wed 11:30 - 12:30 in CP 317.
- Go to the Math Tutorial Lab in-person in CP 303 or online.