## Mth 28.5, Homework 13 on trigonometry
Due by Mon, Dec 9.

Try these questions. Please use lots of space and as many pages as you want, so I can include corrections or comments. You do not need to write the questions, but it is very important that you show clearly any work you had to do to get your answers. Each question is worth 2 points.
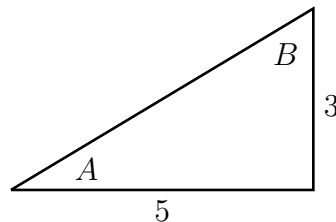

Section 5.4 Right Triangle Trigonometry, Part I

(1) For this right triangle, find
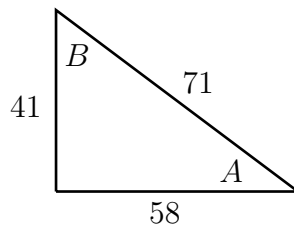
    (a) $\cos B$ **(b)** $\tan A$ **(c)** $\sin A$
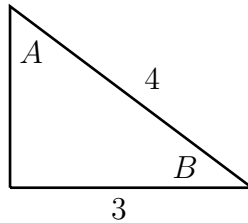
(2) In this right triangle:

    (a) Find the length of the hypotenuse using the Pythagorean theorem. Give your answer as a radical, not a decimal.

    (b) Evaluate and simplify: $\sin B$

    (c) Evaluate and simplify: $\csc A$

    (Remember that there should be no radicals in the denominator.)

(3) (a) Draw the 45-45-90 and 30-60-90 triangles with their side lengths.

    (b) Find $\cos 30°$

    (c) Find $\sin 45°$

    (d) Find $\tan 60°$

(4) Add and simplify: $\csc 60° + \cot 60°$
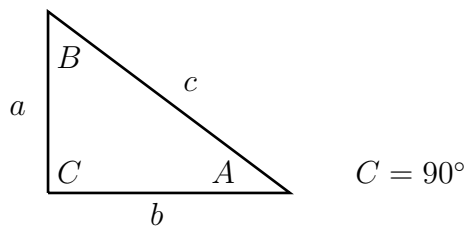
(5) For this triangle,

evaluate and simplify

(a) $\sin B$ **(b)** $\cot B$ **(c)** $\sec A$

Section 5.4 Right Triangle Trigonometry, Part II

$C = 90°$

(6) 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.)

(7) 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)** $\csc B$

(8) 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.)

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

(10) 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.)

(11) 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.

(12) 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 12:00 - 1:00, Wed 12:00 - 1:00 in CP 317.

- Go to the Math Tutorial Lab in-person in CP 303 or online.