Mth 28, Homework 10 on sections 9.2, 9.3, 5.4

Due by Wed, Dec 3.

Write all your working out and answers neatly, using lots of space between questions, and showing your steps clearly. Each exercise is worth 2 points.

Section 9.2 Completing the square

(1) Solve by completing the square: $x^2 + 6x = 1$

(Hint: complete the square on the left and add the same number to the right. Then write the left side as $(x + number)^2$ and finally use the square root property to get the two solutions.)

(2) Solve by completing the square (not by factoring): $x^2 - 12x = -11$

(3) Solve by completing the square: $x^2 + 4x + 5 = 0$

(Make sure any square roots are simplified and write with i if it's the square root of a negative.)

(4) Solve by completing the square: $3x^2 - 3 = 42x$

(Did you get $x = 7 \pm 5\sqrt{2}$?)

Section 9.3 The quadratic formula

(5) State the quadratic formula:

$$\text{If} \quad ax^2 + bx + c = 0 \quad \text{then} \quad x = \frac{??? \pm ???????}{?????}.$$

(6) Use the quadratic formula to show that the solutions to $19x^2 + 9x + 1 = 0$ are:

$$x = \frac{-9 + \sqrt{5}}{38} \quad \text{and} \quad x = \frac{-9 - \sqrt{5}}{38}$$

(7) Use the quadratic formula to solve: $5x^2 - 4x = -1$

(Move that -1 first!)

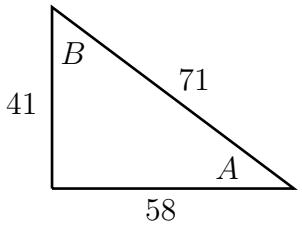
(8) Use the quadratic formula to solve: $3x^2 + 2x = 0$

(No points if you solve it by factoring, but you can check you get the same answer.)

(9) Solve using any method: $(x - 2)(x - 6) = 4$

Section 5.4 Right Triangle Trigonometry, Part I

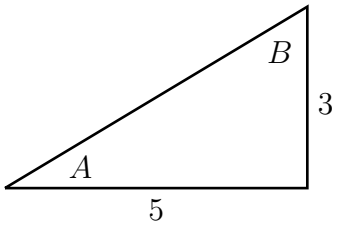
(10) For this right triangle,



find:

(a) $\cos B$ **(b)** $\tan A$ **(c)** $\sin A$

(11) 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.)

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

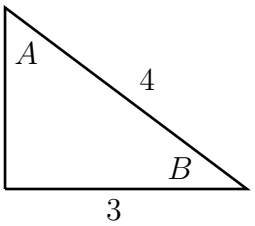
(b) Find $\cos 30°$

(c) Find $\sin 45°$

(d) Find $\tan 60°$

(13) Add and simplify: $\csc 60° + \cot 60°$

(14) For this triangle,



evaluate and simplify:

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

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.