MATH 190, Lab 1: Sept 11 and 13, 2018

Part 1: Precalculus Package

Go to UBC Canvas and choose Precalculus Review-2018W in your dashboard, choose *Classic Review Package.*

- Check the list of the basic math skills and write the ones that you feel weak on.

- A quick browse: Check the content of links to a few of the topics that you have listed above.

Part 2: Practice Problems

Work through the following problems while the instructor and TA circulate. When you have completed the problems (to the satisfactory of the facilitators) you can spend the rest of the lab working on the weeks homework.

A. Warm-up: Find all real values of x satisfying the following equations:

1. $x^2 + 3x - 10 = 0$

2. $x^2 - 25 = 0$

3. $3x^2 + 2x - 8 = 0$

4. $x^2 - 4x - 4 = 0$

5. $x^2 - 3x + 10 = 0$

> **Quick Review:**
> To solve a quadratic equation $ax^2 + bx + c = 0$
>
> * Start with inspecting the quadratic expression for *factoring.*
>
> * If NO factoring works, then we use *quadratic formula.* What is the quadratic formula?

B. Questions

1. Consider the function
$$g(x) = \frac{3x^2 + 2x - 8}{x + 2}$$

   (a) What is the domain of g?

   (b) Sketch the graph of g.

2. We can write the function $(x^2 + 1)^3$ as a composition of two functions. That is
$$(x^2 + 1)^3 = f(g(x)) \quad \text{where } f(x) = x^3 \text{ and } g(x) = x^2 + 1.$$

   Do this decomposition for the following functions:

   (a) $\cos \sqrt{x}$

   (b) $\sin^2 x$

   (c) $\sqrt{\tan(x^2)}$

   * How can you write (c) as composition of three functions?

Reflection: (Individually) Write down three (short-term) goals that you plan to achieve in the coming week to improve your studying and success in the course. (Think about your weaknesses).

Some Resources:

1. Pre-calculus packages on Canvas
   (classic and calculus-inspired review packages)

2. UBC 1st year math study skills:
   https://blogs.ubc.ca/mathstudyskills/

3. MER wiki (solutions to past exams):
   http://wiki.ubc.ca/Science:Math_Exam_Resources

4. Math Learning Center: (Location: LSK 301, 302)
   https://www.math.ubc.ca/ MLC/