Tutorial 2

Week of September 17, 2018

**Review summary of transformations given at the bottom of page 37 of your textbook.

1. Sketch the following:
   (a) $y = 2\sqrt{x+1}$
   (b) $y = 2 - \sqrt{x}$
   (c) $y = |\sqrt{x} - 1|$
   (d) $y = 3 - 2\cos x$

2. The relationship between the Fahrenheit (F) and Celsius (C) temperature scales is given by the linear function $F = \frac{9}{5}C + 32$.
   (a) Sketch the graph of the function.
   (b) What is the slope of the graph? What does it represent?
   (c) What does the intercept represent?

3. Let $f(x) = \sqrt{3-x}$ and $g(x) = 2x - 5$. Compute the following and state the domain.
   (a) $f + g$
   (b) $f - g$
   (c) fg
   (d) f/g
   (e) $f \circ g$
   (f) $g \circ f$

4. Determine whether the following are true or false. Explain your reasoning.
   (a) If f and g are linear functions, then $f \circ g$ is a linear function.
   (b) The graph of $y = 2^{-x}$ is the same as the graph of $y = 0.5^x$.
   (c) Since $e < 3$, $e^x < 3^x$ for all x.
   (d) The range of $1 - 5\cos(1 - x)$ is $-4 \leq y \leq 6$.

5. Let f be a one-to-one function with domain A and range B.

   (a) What is the domain of f^{-1}? What is the range of f^{-1}?

   (b) Suppose $f(x) = x^5 + x^3 + x$. Find $f^{-1}(3)$ and $f(f^{-1}(2))$.