Lecture 5 - Homework (FIXED **)

NOTE*: For Question 1 and Question 2, in each function you are given a set of coordinates that you **must** transform, and you must **label** them on your final sketch. Of course, you can use more coordinates as you wish for more accuracy in your sketch.

Question 1. Let $f(x) = x^2$. Sketch the following functions,

(a) $\mathcal{Z}(x) = -f(-x)$,

(i) $(0,0), (2,4), (-2,4)$.

(b) $L(x) = -2f(\frac{1}{4}x) + 3$,

(i) $(0,0), (-1,1), (-2,4)$.

(c) $R(x) = \frac{1}{2}f(-2x+2) - 1$,

(i) $(0,0), (-2,4), (4,16)$.

Question 2. Let $f(x) = |x|$. Sketch the following functions,

(a) $r(x) = -2f(x+1)$,

(i) $(0,0), (2,2), (-3,3)$.

(b) $g(x) = -f(x-3) + 1$,

(i) $(0,0), (-5,5), (3,3)$.

(c) $h(x) = \frac{3}{2}f(-2x+4) - 2$,

(i) $(0,0), (4,4), (-4,4)$.

Question 3. Let $f(x) = \sqrt{x}$. Suppose we apply the following transformations to f,

- Reflection across the x-axis.
- Vertical compression by a factor of 2.
- Horizontal compression by a factor of 4.
- Horizontal shift, left by 4 units.
- Vertical shift, up by 1 units.

Sketch the transformed function and label it $g(x)$.
Label the coordinates $(-4, g(-4))$, $(0, g(0))$, $(12, g(12))$.

Question 4. For each of the following, state the transformations preformed to the *parent function*.

(a) $f(x) = -\frac{2}{3}(3x-6)^2 - 1$.

(b) $g(x) = 3\sqrt{-4x+12} + 9$.

(c) $h(x) = -4\left|\frac{1}{2}x + 1\right|$.

Question 5. Homework sheet, Q4, Q61, Q62.