University of Utah
Math 1210, Spring 2008
Name: *Solutions*

Quiz # 1
Time: 15 minutes

Show all work.

Part 1: (4 points) Find an equation for the line joining the points $(2,1)$ and $(1,2)$. What are this line's slope and $y-$intercept?

The slope is $\frac{2-1}{1-2} = -1$. We can then find an equation in point-slope form: $y-1 = -1 \cdot (x-2)$ (or: $y-2 = -1 \cdot (x-1)$)
The equation can be rewritten as: $y = -x + 3$
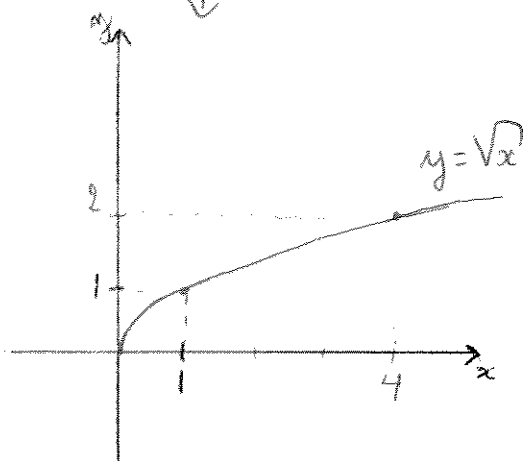and the y-intercept is 3.

Part 2: (6 points). Consider the functions $f_1(x) = \sqrt{x}$, $f_2(x) = \sqrt{x}+1$ and $f_3(x) = \sqrt{x+1}$. What are the domains of f_1, f_2, f_3? Sketch the graph of f_1 in the first frame below, then explain how to find the graphs of f_2 and f_3 from it and sketch them separately in the 2 other frames.

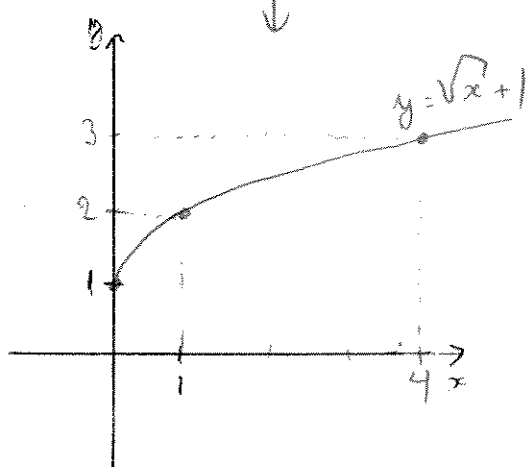The domain of f_1 is $\mathbb{R}^+ = \{x / x \geq 0\}$ ($\sqrt{x}$ is defined for $x \geq 0$). $= [0; +\infty)$
Same for f_2. For f_3, $\sqrt{x+1}$ is defined for $x+1 \geq 0$, or $x \geq -1$.
Therefore the domain of f_3 is $\{x / x \geq -1\} = [-1; +\infty)$

The graph of f_1 is one branch of the parabola $y^2 = x$.

The graph of f_2 is the graph of f_1 shifted one unit up.

The graph of f_3 is the graph of f_1 shifted one unit to the left.

$y = \sqrt{x}$

$y = \sqrt{x}+1$

$y = \sqrt{x+1}$