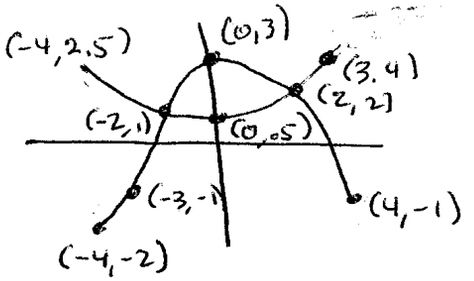
MAT 201 S1.1 I #s 2, 3, 7, 10, 17, 20, 22

(2) See the graph for f & g:



(a) $f(-4) = -2$, $g(3) = 4$

(b) $f(x) = g(x) \iff x = -2, 2$

(c) $f(x) = -1 \iff x = -3, 4$

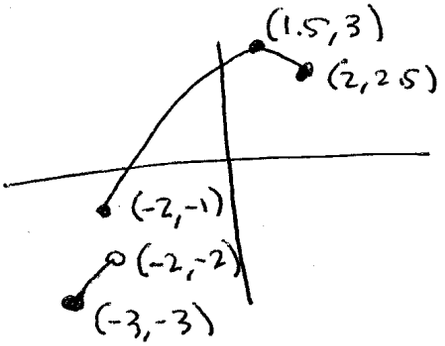
(d) f is decreasing on $[0, 4]$

(e) $D(f) = [-4, 4]$, $R(f) = [-2, 3]$

(f) $D(g) = [-4, 3]$, $R(g) = [.5, 4]$

(3) Figure 1 shows a graph with range $[-70, 120]$ cm/s²

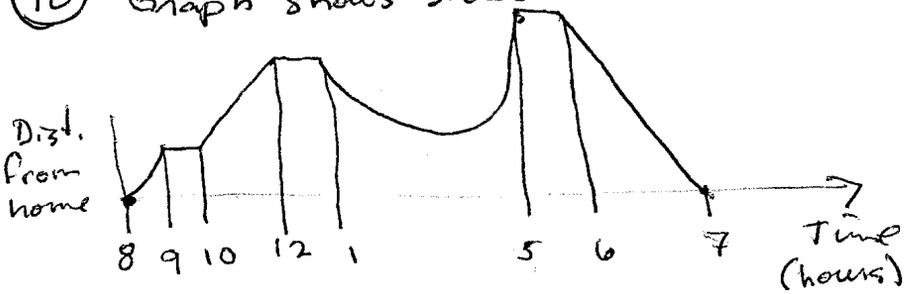
(7) Determine if graph represents a function. If it does, state the domain & range.



Yes. $D = [-3, 2]$

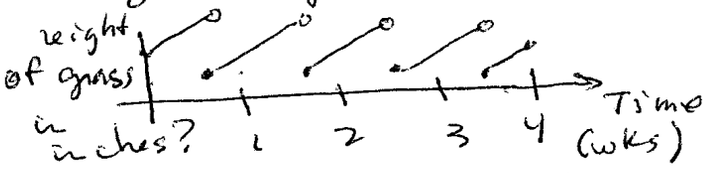
$R = [-3, -2) \cup [-1, 3]$

(10) Graph shows salesman's distance from home.



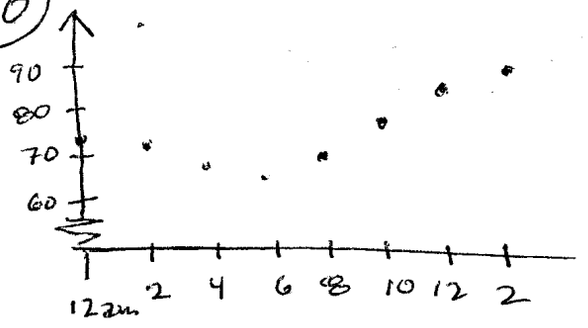
8 am - left home
9 am - stopped at work
10 am - left work. went door-to-door
12 pm - lunch
1 pm - went on a loop?
5 pm - met w/ boss
6 pm - went home.

(17) You mow the lawn Wednesday. Sketch a graph describing height of the grass over 4-week period



MAT 201 §1.1 #s 20, 22

(20)



Time	Temp
12	73
2	73
4	70
6	69
8	72
10	81
12	88
2	91

We make a graph based on temp. measurements every 2 hours, from Midnight to 2pm in Dallas, TX.

(22) A spherical balloon with radius r inches has volume $V = \frac{4}{3}\pi r^3$. Find a function that gives the amount of air needed to inflate the balloon from a radius of r inches to a radius of r+1 inches.

$V(r) = \frac{4}{3}\pi r^3$, $V(r+1) = \frac{4}{3}(r+1)^3\pi$, so the difference in volume is $V(r+1) - V(r)$

$$= \frac{4}{3}\pi(r+1)^3 - \frac{4}{3}\pi(r)^3$$

$$= \frac{4}{3}\pi\left[r^3 + 3r^2 + 3r + 1 - r^3\right]$$

$$= \frac{4}{3}\pi\left[3r^2 + 3r + 1\right]$$

This probably isn't a good model, since air pressure rises, and so "volume" is a bit sketchy, due to the compressibility of air.