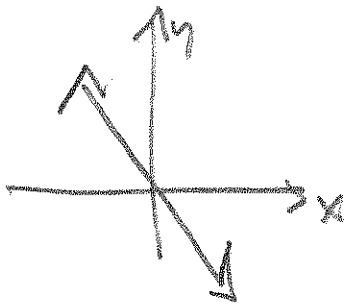
121 §2.2 #s1–6
#s53–55, 57, 59, 73, 75, 77

#s53–60 State $\mathcal{D}$, $\mathcal{R}$, and intervals on which the function is increasing, decreasing or constant. Throwing in symmetry, here and...

53a



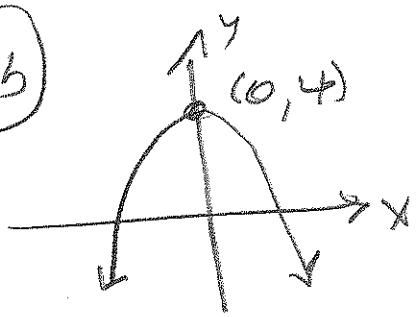
$\mathcal{D} = \mathbb{R}$; $\mathcal{R} = \mathbb{R}$

Dec: $\mathbb{R}$

Symmetry: Origin

ODD

53b



$\mathcal{D} = \mathbb{R}$, $\mathcal{R} = (-\infty, 4]$

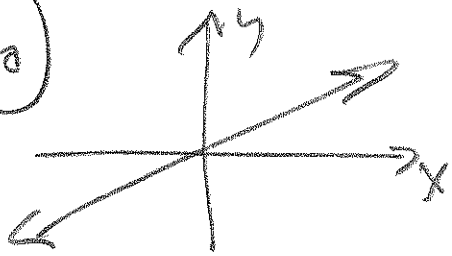
Inc: $(-\infty, 0)$

Dec: $(0, \infty)$

Symmetry: y-axis

EVEN

54a



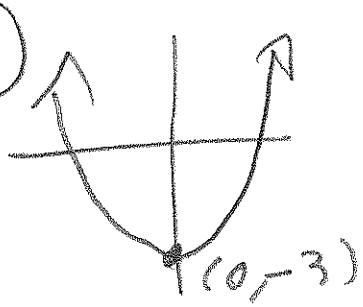
$\mathcal{D} = \mathbb{R}$; $\mathcal{R} = \mathbb{R}$

Inc: $(-\infty, \infty) = \mathbb{R}$

Sym: origin

ODD

54b



$\mathcal{D} = \mathbb{R}$; $\mathcal{R} = [-3, \infty)$

Inc: $(0, \infty)$

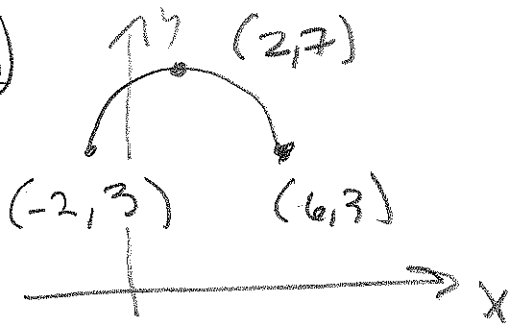
Dec: $(-\infty, 0)$

Sym: y-axis

EVEN

121 §2.2

55a



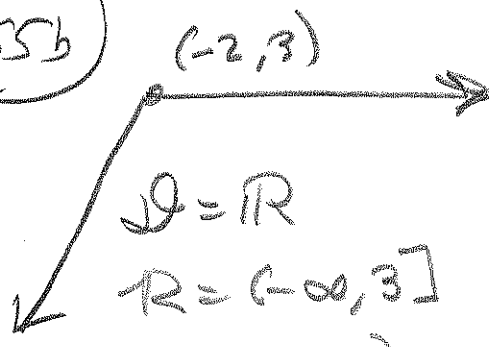
$\mathcal{D} = [-2,6]$; $\mathcal{R} = [3,7]$

Inc: $(-2,2)$

Dec: $(2,6)$

Sym: None

55b



$\mathcal{D} = \mathbb{R}$

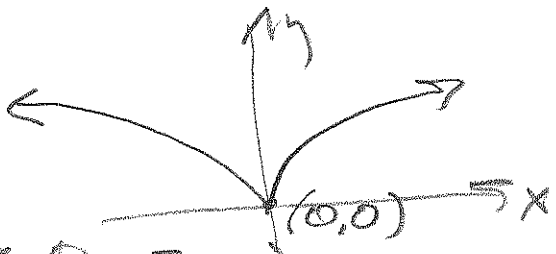
$\mathcal{R} = (-\infty, 3]$

Inc: $(-\infty,-2)$

Constant: $[-2,\infty)$

Sym: None

57a



$\mathcal{D} = \mathbb{R}$; $\mathcal{R} = [0,\infty)$

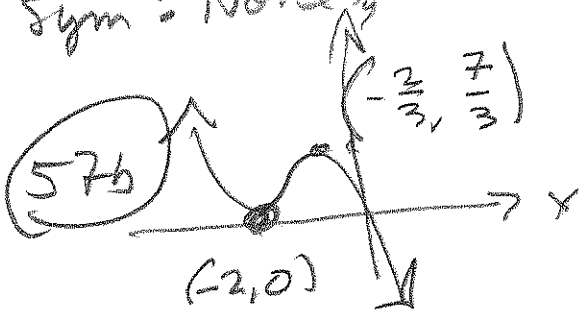
Inc: $(0,\infty)$

Dec: $(-\infty,0)$

Sym: $y-axis$

EVEN

57b



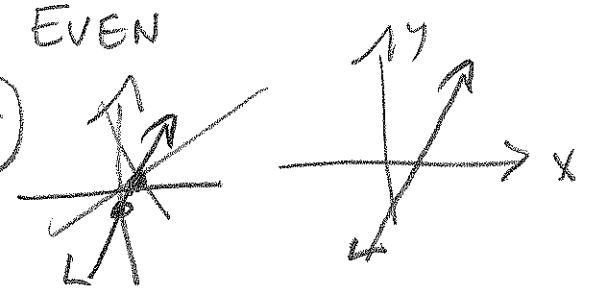
$\mathcal{D} = \mathbb{R}$; $\mathcal{R} = \mathbb{R}$

Inc: $(-2,-\frac{2}{3})$

Dec: $(-\infty,-2) \cup (-\frac{2}{3},\infty)$

Sym: None.

59

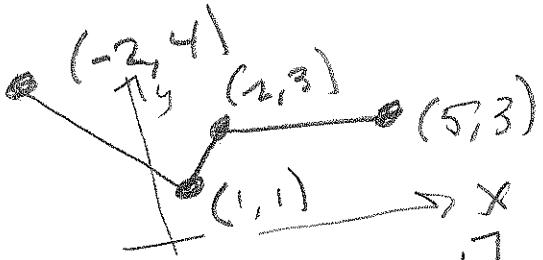


$\mathcal{D} = \mathbb{R} = \mathbb{R}$

Inc: $(-\infty,\infty)$

Sym: None

59b



$\mathcal{D} = [-2,5]$; $\mathcal{R} = [1,4]$

Inc: $(1,2)$ Sym: None

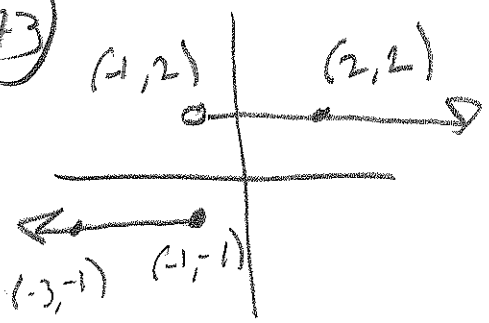
Dec: $(-2,1)$

Constant: $[2,5]$

121 §2.2

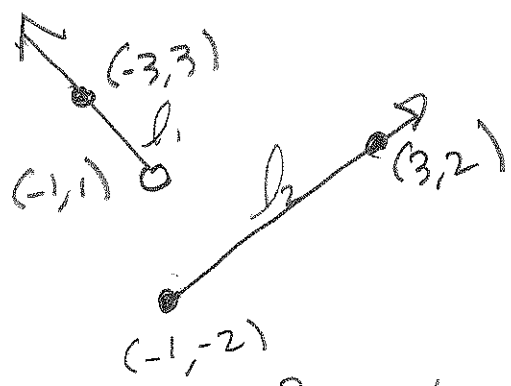
#s 73-78 Write a piecewise function for the given graph

(73)



$$f(x) = \begin{cases} -1 & \text{if } x \le -1 \\ 2 & \text{if } x > -1 \end{cases}$$

(75)



l_1: $m = \frac{3-1}{-3+1} = \frac{2}{-2} = -1$

$y = -1(x-(-3))+3$

$= -x-3+3$

$y = -x$

l_2: $m = \frac{2-(-2)}{3-(-1)} = \frac{4}{4} = 1$

$y = 1(x-3)+2$

$= x-3+2$

$y = x-1$

Suture: $x = -1$

$$f(x) = \begin{cases} \text{Build eq'n} & \text{if } x < -1 \\ 1 & \text{if } x \ge -1 \end{cases}$$

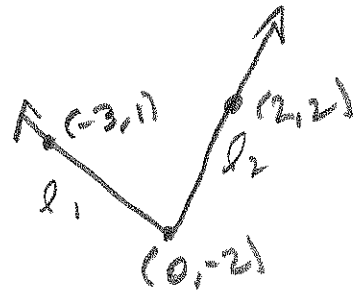
→ Totally OK on test to leave it like this.

$$f(x) = \begin{cases} -x & \text{if } x < -1 \\ x-1 & \text{if } x \ge -1 \end{cases}$$

121 §2.2

In-class: Y'all do #76!

(77)



l_1: $m = \frac{1-(-2)}{-3-0} = \frac{3}{-3} = -1$

$y = -1(x-0) - 2$

$y = -x - 2$

l_2: $m = \frac{2-(-2)}{2-0} = \frac{4}{2} = 2$

$y = 2(x-0) - 2$

$y = 2x - 2$

$$f(x) = \begin{cases} l_1, & x < 0 \\ l_2 & x \geq 0 \end{cases}$$

Always nice for lines, when y-intercept's given.

$$f(x) = \begin{cases} -x-2 & \text{if } x < 0 \\ 2x-2 & \text{if } x \geq 0 \end{cases}$$