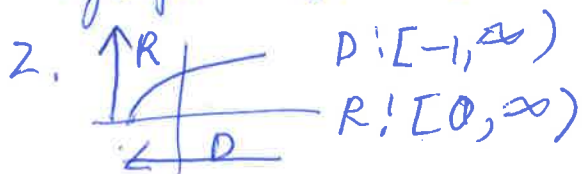
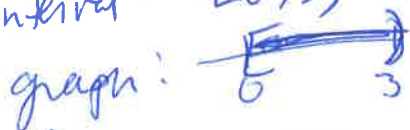


# Math III Exam 1 - Review Answers

1.  $0 \leq x < 3$

Set:  $\{x \mid 0 \leq x < 3\}$

interval  $[0, 3)$



3 a)  $f(0) = -4$

b)  $f(-2) = -4$

c)  $f(x) = 0$  at  $x = 2$

d) D:  $[-2, 3)$

e) R:  $[-4, 2)$

f)  $f(x) = \begin{cases} -4 & \text{for } -2 \leq x < 0 \\ 2x - 4 & \text{for } 0 \leq x < 3 \end{cases}$

4.  $y = 2x - 8$

5.  $f(1) = 3$

$f(2) = 12$

rate of change =  $\frac{12-3}{2-1}$

=  $\frac{9}{1}$  (like a slope)

b. a) y-symmetrical  $y = x^2$

b) x-symmetrical  $x = y^2$

c) origin symmetrical:  $y = x^3$

7.  $fg(5) = \frac{1}{17}$

b)  $g(f(x)) = 3\left(\frac{1}{x-2}\right) = \frac{3}{x-2}$

8.  $y = \frac{1+2x}{x}$ ;  $f^{-1}(x) = \frac{1}{x} + 2$

9. Inverse:

x	$f^{-1}(x)$
4	0
5	1
7	2

D:  $\{4, 5, 7\}$

R:  $\{0, 1, 2\}$

(delay) 10. wind pt  $(-3/2, 13)$

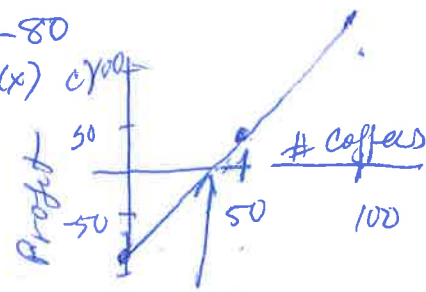
dist:  $\sqrt{125} = 5\sqrt{5}$

delay 11.  $(x+1)^2 + y^2 = 13$

12.  $P(x) = 2x - 80$

b) 

x	$y = P(x)$	C (doll)
0	-80	
50	20	
100	120	



d) Based on graph, guess  
x-int is 40

Exact calculation:

x-int. means  $y = 0$  or  $P(x) = 0$

$0 = 2x - 80$

$80 = 2x, x = 40$

e) Must sell 40 coffees to  
"break even" - zero profit

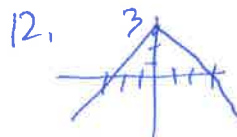
11. a)  $(0, 8800)$   $(5, 9600)$

b)  $m = 160$

c) \$160/year tuition increase

d)  $T(x) = 160x + 8800$

e)  $T(9) = \$10,240$



b) D:  $(-\infty, \infty)$

R:  $(-\infty, 3]$

a) inc. on  $(-\infty, 0)$

dec. on  $(0, \infty)$