4.1 → 37, 29e, 41a
4.3 → 77, 27
4.4 → 17

SECTION 4.1

(37) $C(x) = 0.25x + 35$

a.) $C \leq 100$

$100 = 0.25x + 35$
$-35 \quad -35$
$\frac{65}{.25} = \frac{0.25x}{.25}$
$260 = x$
260 miles

d.) What is the implied domain of C?
$[0, \infty)$

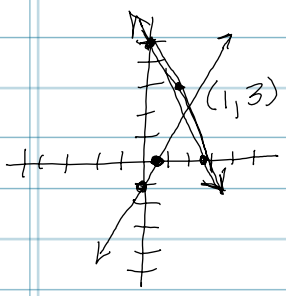
(29e) $f(x) = 4x - 1 \quad g(x) = -2x + 5$

$4x - 1 = -2x + 5$
$+2x \quad +2x$
$6x - 1 = 5$
$+1 \quad +1$
$6x = 6$
$x = 1$

Graph: $y = 4x - 1$

x	y
0	-1
1/4	0

$0 = 4x - 1$
$1 = 4x$
$\frac{1}{4} = x$



$g(x) = -2x + 5$

x	y
0	5
2½	0

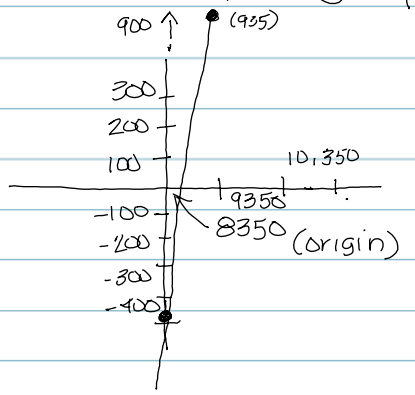
$-2x + 5 = 0$
$-2x = -5$
$x = \frac{5}{2}$

(41a) $T(x) = 0.15(x - 8350) + 835$ $8350 to $33,950
min max

[8350 to 33,950]

(d) $T(x) = 0.15x - 1250.5 + 835$

$T(x) = 0.15x - 417.5$ (scale 1:1)



9350 (-417.50)

SECTION 4.3

(27) $f(x) = -x^2 - 2x$ shape → ∩

$a = -1$ down → | neutral vertex → (-1, 1) "not readable"

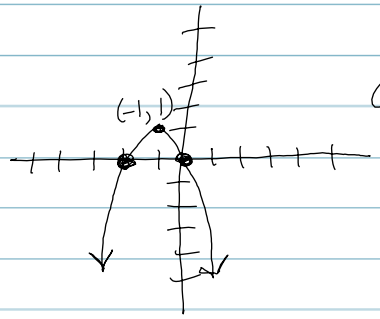
$b = -2$

$c = 0$

general

$h = \frac{-b}{2a} = \frac{-(-2)}{2(-1)} = \frac{2}{-2} = -1$

X	Y
-2	0
-1	1
0	0



axis of symmetry $x = -1$

$k = -(-1)^2 - 2(-1)$

$= -1 + 2$

$= 1$

X	Y
-1	1

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

R: $(-\infty, 1]$

To find intercepts: (x-int) → y=0

y-int → set x to zero

$(h, k) = (-1, 1)$

$a = -1$

$0 = -x^2 - 2x$

(or)

$x = h \pm \sqrt{\frac{-k}{a}}$

$x = -1 \pm \sqrt{\frac{-1}{-1}}$

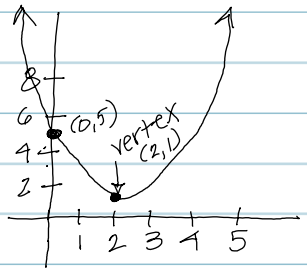
$x = -1 \pm 1$

$-1 + 1$

$-1 - 1$

-2

★(18)



$y = a(x-h)^2 + k$

$y = a(x-2)^2 + 1$

$(x,y) = (0,5)$

$5 = a(0-2)^2 + 1$

$-1 \qquad -1$

$4 = a(4)$

$1 = a$

$\boxed{y = (x-2)^2 + 1}$

(17) $C(x) = x^2 - 140x + 7400$

marginal cost → cost of the next unit

To minimize → find the vertex

$h = \frac{-b}{2a}$ (x = # of players)

$= \frac{-(-140)}{2(1)}$

$= 70$ (in thousand)

$= 70{,}000$

$C(x)$ = cost

$K = (70)^2 - 140(70) + 7400$

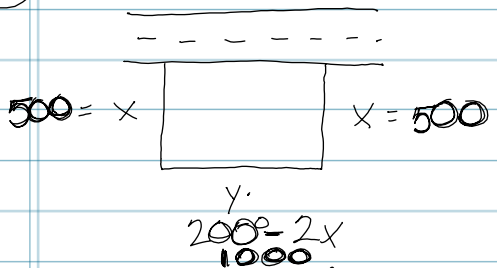
$= \$2500$

$\frac{2500}{70K} = .35$ ← cost per player

SECTION 4.4

(19)  WE'RE FOCUSED ON 

(16)



maximize → Area → $L \cdot W$

$A = L \cdot W$

$A = x(2000 - 2x)$

$= 2000x - 2x^2$

$= -2x^2 + 2000x$

max

(A) $K = -2(500)^2 + 2000(500)$

$= 500{,}000\ m^2$

(x) $h = \frac{-b}{2a}$

$= \frac{-2000}{2(-2)} = 500$