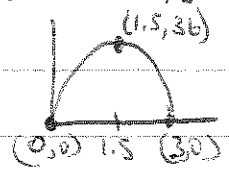


12/3

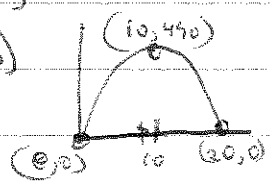
1) a)  $h(t) = -16t^2 + 48t$        $-16t(t-3)$       c) 36 ft

b)  $(1.5, 36)$        $(1.5, 36)$       d) 3 secs.

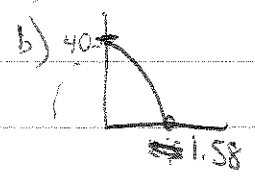


2) a)  $h(t) = -4.9t^2 + 98t$        $-4.9t(t-20)$       c) 490 m

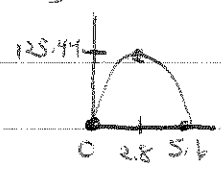
b)  $(10, 490)$        $(10, 490)$       d) 20 secs



3) P. 270 38) a)  $h(t) = -16t^2 + 40$       c) 1.58 secs

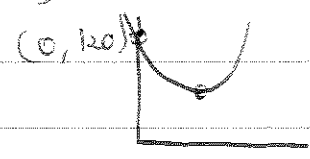


4) P. 289 39)  $h(t) = -16t^2 + 89.6t = -16t(t-5.6)$



At 2.8 secs, max height of 125.44 ft.

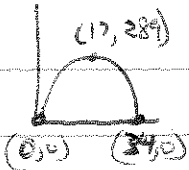
40)  $y = 0.0085x^2 - 1.5x + 120$



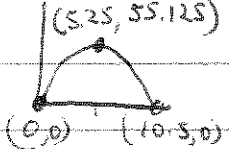
$h = \frac{1.5}{2(0.0085)} = 88.24 \text{ m/min}$  when walking at 88.24 m/min you rate

$k = 53.82 \text{ cal/min}$  of energy use at minimum of 53.82 cal/min.

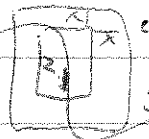
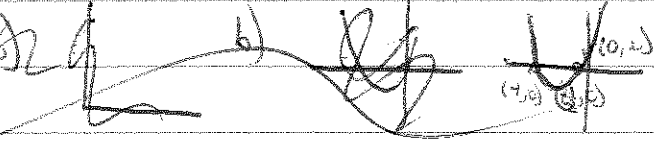
12/4


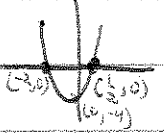
1) a)  $2x+2y=68$  g)  $A=x(34-x)$  b)  d)  $289 \text{ ft}^2$   
 $y=34-x$  d) D:  $x \in (0, 34)$  R:  $A \in (0, 289]$

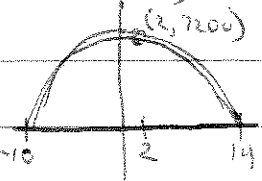
e)  $-x^2+34x=208$   
 $0=x^2-34x+208$   $x=26$   $x=8$   $26 \times 8$  or  $8 \times 26$

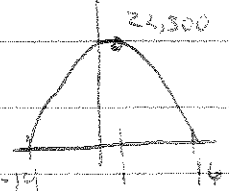
2) a)  $2x+y=21$   $A=x(21-2x)$  b)  c)  $55.125 \text{ m}^2$   
 $y=21-2x$  d) D:  $x \in (0, 10.5)$  R:  $A \in (0, 55.125]$

e)  $-2x^2+21x=55$   
 $0=2x^2-21x+55$   $x=5.5$   $x=5$   $5.5 \times 10$  or  $5 \times 11$

3)  a)  $A=(2x+1)(2x+2)$  b) 

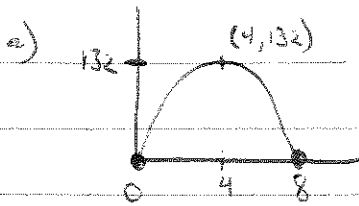
3)  a)  $A=(2x+1)(2x+1)-6$  b)   
 c)  $0=4x^2+6x-6$   
 $0=4x^2+6x-4$   
 $0=2x^2+3x-2=(2x-1)(x+2)$   $x=\frac{1}{2} \text{ ft}$

4) a)  $R=(170-10x)(50+5x)$  b)  c) \$120 to produce max of \$7200

5) a)  $R=(320-20x)(70+5x)$  Sell \$300 to produce max \$22,500  
 b) 

12/5

1)  $P(t) = -8.25t^2 + 66t = -8.25t(t-8)$



b)  $120 = -8.25t^2 + 66t$

c) 4secs. 132 ft

$8.25t^2 - 66t + 120 = 0$

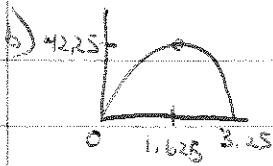
$t = 2.79 \text{ sec}$

Velocity

2)  $H(t) = -16t^2 + 52t = -16t(t-3.25)$

c)  $-16t^2 + 52t = 23$

d) 2.19 secs

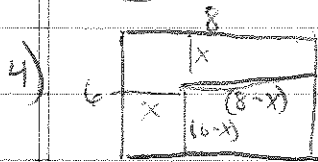


$16t^2 - 52t + 23 = 0$

$t = 2.72 \text{ secs}$

$t = .53 \text{ sec}$

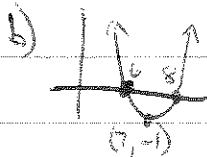
Area



Total Area Carpet + other Area = ~~48~~ Area

~~A = 48~~

~~A = (8-x)(6-x)~~  $A = (8-x)(6-x) = x^2 - 14x + 48$



c)  $(8-x)(6-x) = 25$

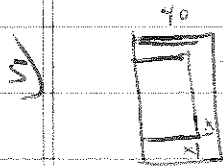
$x^2 - 14x + 23 = 0$   $x \approx 1.9 \text{ m}$

$x^2 - 14x + 48 \geq 0$

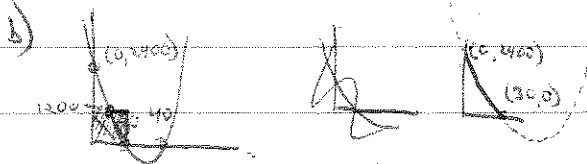
d) D:  $[0, 6)$  R:  $(0, 48]$

e)  $x^2 - 14x + 48 \geq 33.6$

~~x~~  $0 \leq x \leq 1.12 \text{ m}$



a)  $A = (40-x)(60-2x) = 2x^2 - 140x + 2400$



c) (35, -50) not reasonable, negative Area

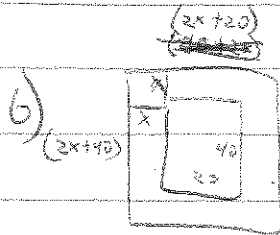
d) (0, 2400) no, no sidewalk

e)  $2x^2 - 140x + 2400 \geq 1200$

$2x^2 - 140x + 1200 \geq 0$

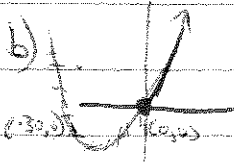
$x^2 - 70x + 600 \geq 0$

$0 \leq x \leq 10$



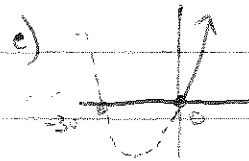
a)  $A = (2x+20)(2x+20) - 800$

$A = 4x^2 + 120x = 4x(x+30)$



c)  $A = (2 \cdot 6 + 20)(2 \cdot 6 + 20) = (32)(52) = \frac{864}{100} \text{ ft}^2$

d)  $C = 4.2(4x^2 + 120x) = 16.8x^2 + 504x$



f)  $4.2(4x^2 + 120x) \leq 4000$

$4x^2 + 120x - \frac{4000}{4.2} \leq 0$

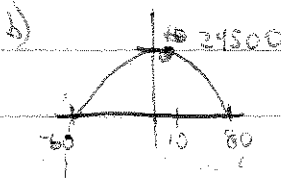
$x^2 + 30x - \frac{1000}{4.2} \leq 0$

$4.2x^2 + 126x - 1000 \leq 0$

$-36.52 \leq x \leq 6.52$

$x \in (0, 6.52] \text{ ft}$

Revenue  $\rightarrow$  a)  $R = (400 - 5x)(60 + x)$  c) 70 members

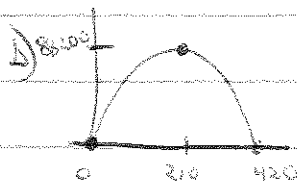


8)  $R = (540 - 2x)(150 + x)$  / if  $x = \#$  of passengers  $(x - 150)(x - 150)$

$R = x(540 - 2(x - 150)) = x(-2x + 840)$

passengers

$R = -2x^2 + 840x$



$R = \begin{cases} 540x & 0 \leq x \leq 150 \\ -2x^2 + 840x & 151 \leq x \leq 208 \end{cases}$

$R = \begin{cases} 540x & 0 \leq x \leq 150 \\ -2x^2 + 840x & 151 \leq x \leq 208 \end{cases}$

c)  $D: [0, 208]$   $R: [0, 88192]$

d)  $h = 210$  210 is not reasonable / ~~not to min~~ but not for absolute maximum

e) 149 passengers  $\$80000$   
( $\$80460$ )

max seating (e.i.d) charge  $\$380.95/\text{ticket}$

274

or

145