DO NOW:

1) What is slope-intercept form of a line?

$y = mx + b$

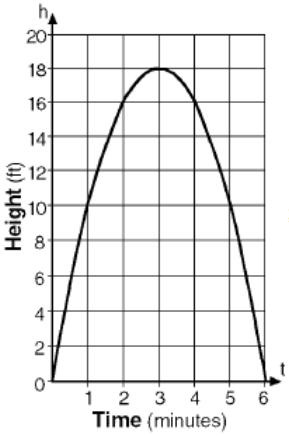
2) Convert the following into slope-intercept form:

$3y = 6x - 9$ $\quad$ $2x - y = 4$ $\quad$ $4y - 2x = 8$

$y = 2x - 3$ $\quad$ $y = 2x - 4$ $\quad$ $y = (1/2)x + 2$

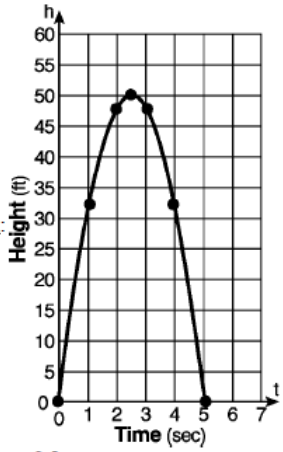
2) Part A:

t	$-t^2+12t$	h
0		0
1		10
2		16
3		18
4		16
5		10
6		0



Part A: Time: 3 min; Height: 18 ft; Part C: 10 ft

3) Part A:



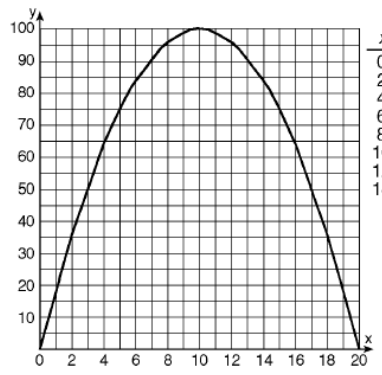
t	h
0	0
1	32
2	48
3	48
4	32
5	0

Part B: $t = 2.5$

WORK SHOWN: $t = -\frac{b}{2a}$, $t = -\frac{40}{2(-8)}$, $t = 2.5$; $h = -8t^2 + 40$

$h = -8(2.5) + 40(2.5)$; $h = 50$; h is greatest at 2.5

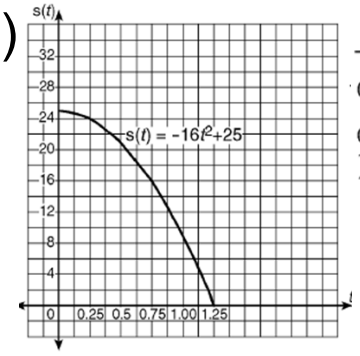
4)



x	$-x^2 + 20x$	y
0		0
2		36
4		64
6		84
8		96
10		100
12		96
14		84

, 100 ft

5)



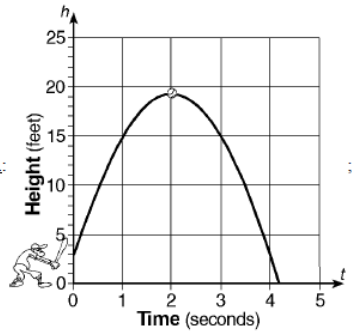
t	$-16t^2+25$	$s(t)$
0		25
0.25		24
0.5		21
0.75		16
1.00		9
1.25		0

Part B: 1.25 sec

WORK SHOWN: $s(t) = 0 = -16t^2 + 25$, $16t^2 = 25$, $t^2 = \frac{25}{16}$,

$t = \pm\frac{\sqrt{25}}{\sqrt{16}} = \pm\frac{5}{4}$, $t = \frac{5}{4}$ OR $t = 1.25$

6) Part A:



;

Part B: Time: 2 sec; Height: 19 ft;

Part C: 4.2 sec

WORK SHOWN: $h(t) = -4(t-2)^2 + 19 = -4(t^2 - 4t^2 + 4) + 19 =$

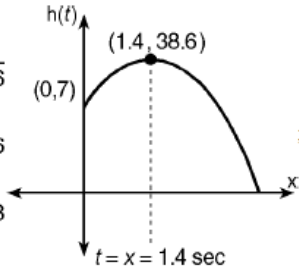
$-4t^2 + 16t^2 + 3$, $a = -4$, $b = 16$, $c = 3$, $t = \frac{b \pm \sqrt{b^2 - 4ac}}{2a}$,

$t = \frac{-(16) \pm \sqrt{(16)^2 - 4(-4)(3)}}{2(-4)} = \frac{-16 \pm \sqrt{304}}{-8} = \frac{-16 - 17.4356}{-8} =$

$4.179 \approx 4.2$

7) Part A:

x	$h(t)$
1.36	38.606
1.37	38.62
1.38	38.63
1.39	38.636
1.40	38.64
1.41	38.64
1.42	38.638



Part B: Time: 1.4 sec; Height: 38.6 ft

WORK SHOWN: $h(t) = -16t^2 + 45t + 7$, $t = \frac{-b}{2a}$, $t = \frac{-45}{2(-16)} = \frac{-45}{-32} =$

$\frac{45}{32} = 1.4$ sec; $h(1.4) = -16(1.4)^2 + 45(1.4) + 7 = 38.64$;

Part C: 2.96 sec

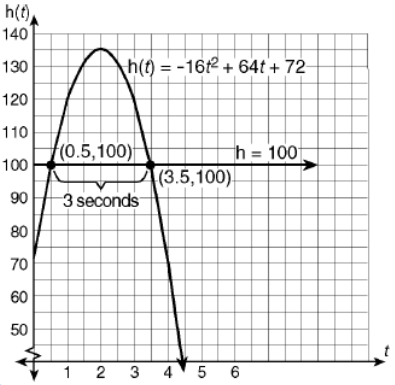
WORK SHOWN: $h(t) = -16t^2 + 45t + 7$, $a = -16$, $b = 45$, $c = 7$,

$t = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$, $t = \frac{-(45) \pm \sqrt{(45)^2 - 4(-16)(7)}}{2(-16)} = \frac{-45 \pm \sqrt{2,473}}{-32} =$

$\frac{-45 - 49.7292}{-32} = 2.96$

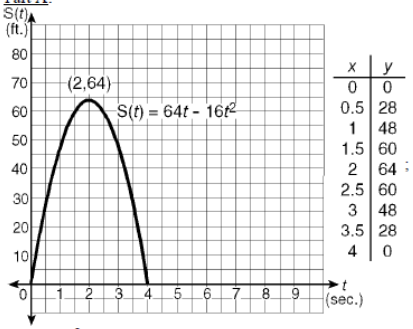
8) Part A:

t	$-16t^2+64t+72$	$h(t)$
0.0		72
0.5		100
1.0		120
1.5		132
2.0		136
2.5		132
3.0		120
3.5		100
4.0		72
4.5		36



; Part B: 3 sec; Part C: (0,2)

10) Part A:



x	y
0	0
0.5	28
1	48
1.5	60
2	64
2.5	60
3	48
3.5	28
4	0

;

Part B: 64 ft

WORK SHOWN: $t = \frac{-b}{2a} = \frac{-64}{2(-16)} = 2$, $s(t) = 64t - 16t^2 =$

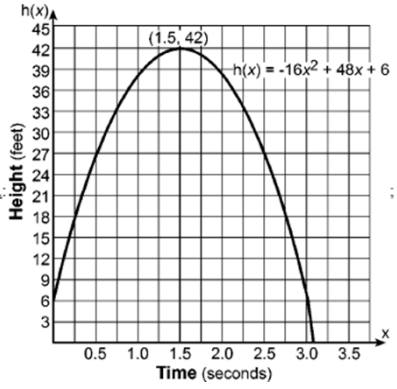
$s(2) = 64(2) - 16(2)^2 = 64$;

Part C: 4 sec

WORK SHOWN: $0 = 64t - 16t^2$, $0 = 16t(4 - t)$, $16t = 0$,

$t = 0$ (reject) AND $4 - t = 0$, $t = 4$ sec

9) Part A:



;

Part B: 3 sec

WORK SHOWN: $h(x) = -16x^2 + 48x + 6$, $6 = -16x^2 + 48x + 6$,

$0 = -16x^2 + 48x$, $0 = -16x(x - 3)$, $-16x = 0$, $x = 0$ (FALSE) OR

$x - 3 = 0$, $x = 3$ (TRUE);

Part C: 3.12 sec

WORK SHOWN: $(-1)y = (-1)(-16x^2 + 48x + 6) = 16x^2 - 48x - 6$,

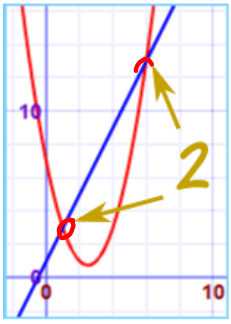
Quadratic-Linear Systems: consist of a quadratic equation ($y = ax^2 + bx + c$) and a linear equation ($y = mx + b$)

$$y = x^2 - x - 6$$

$$y = 2x - 2$$

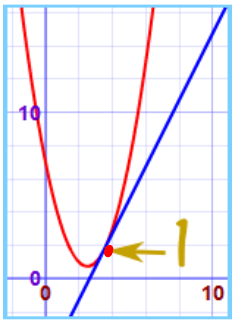
The **solution** to a quadratic-linear system is the set of ordered pairs where the equations intersect each other.

Two Solutions
(two points of intersection)



One Solution

(one point of intersection)



No Solutions

(no points of intersection)

State all coordinates for which f(x) = g(x):

$f(x) = x^2 + 2x + 1$

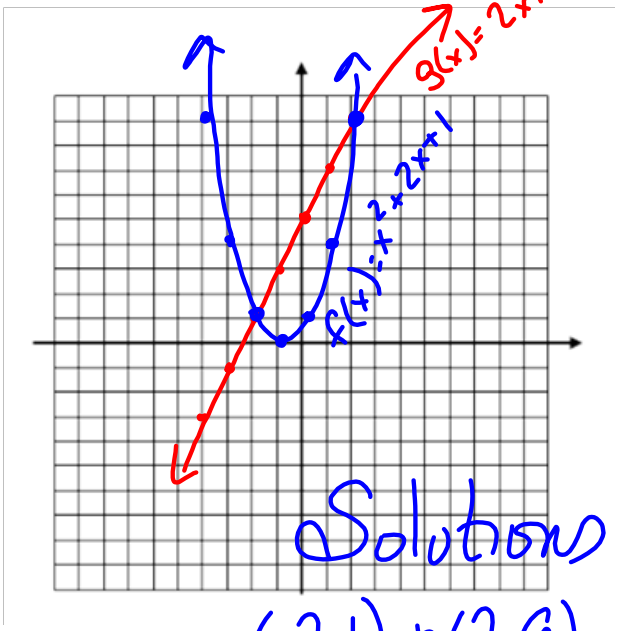
$g(x) = 2x + 5$

$m = \frac{2}{1}$

$b = 5$

f(x)

x	y
-3	4
-2	1
-1	0
0	1
1	4
2	9



Solutions

(-2, 1) & (2, 9)