Today's Learning Goal(s):

By the end of the class, I will be:

a) ready for the Unit 4 Summative

Unit Review

Date: Nov. 7 /16

Review Quiz 1 and Quiz 2

Recognizing a Quadratic Relation

from the equation $y=x^2$ $y=5(x-2)^2$, $y=x^2-7$, $y=3x^2+2$

from a table of values 2nd differences are constant

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

	$y = -2(x-3)^2+5$	$y = 2(x+4)^2+7$	$y = \frac{1}{4}(x-5)^2-6$
vertex $V(h,k)$	$V(3,5)$	$V(-4,7)$	$V(5,-6)$
moving left/right vs. up/down	right 3, up 5	left 4, up 7	right 5, down 6
recognizing max. vs. min ($a>0$ $a<0$)	max, $a<0$, ↘↙	min, $a<0$, ↗↖	min, $a>0$, ↗↖
What IS the max/min value?	max = 5	min = 7	min = -6
direction of opening (k)	down	up	up
stretch vs. compression (a)	vertical stretch by a factor of 2 ($a>1$)	vertical stretch by a factor of 2 ($a>1$)	vertical compression by a factor of $\frac{1}{4}$ ($0<a<1$)

Sketching curves in vertex form $y=a(x-h)^2+k$

Word Problems ... see "Understanding" above

Determining the equation of a parabola

start with the vertex, then substitute another known point for (x, y) and solve to get "a" by itself

write the equation as your conclusion

vertex is (8, -2) through point (1, 3)

$y=a(x-8)^2-2$

$3=a(1-8)^2-2$

$3=a(-7)^2-2$

$3=49a-2$

$3+2=49a$

$\frac{5}{49}=\frac{49a}{49}$

$\frac{5}{49}=a$

$\therefore y=\frac{5}{49}(x-8)^2-2$ is the equation.

Determining the y-intercept

let $x = 0$, then solve for y

$y = 2x^2 - 7x - 9$

$=2(0)^2-7(0)-9$

$=0+0-9$

$=-9$

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

$=2(0-3)^2+1$

$=2(-3)^2+1$

$=2(9)+1$

$=18+1$

$=19$

Review Homework:

p. 226 #1, 2, 10* ***see below***, 12

* After you do a rough sketch, find the parabola's equation in the form: $y = a(x-h)^2 + k$

3 graphs (see below)

p. 228 #1 to 6, 11

Correct Last Day's Homework: ***(2 pages later)***

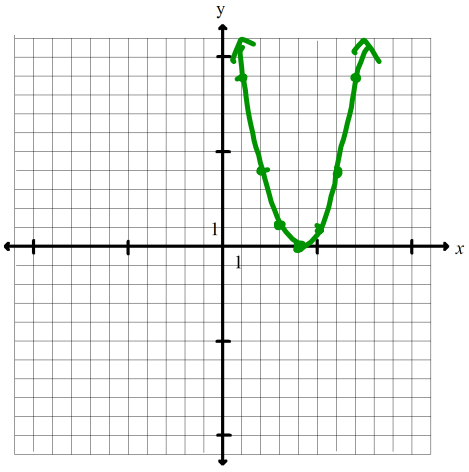
p. 216 #9abc

p. 222 # 1aceg, 2ab, 4, 5*, 7

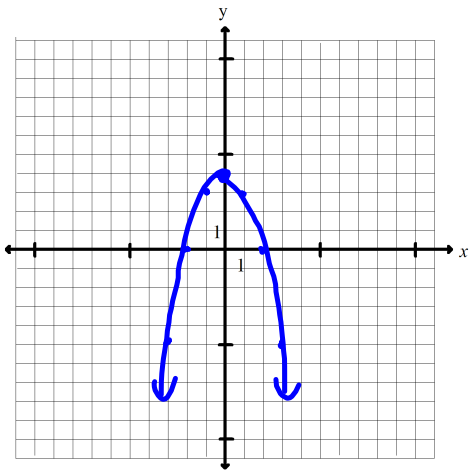
****(use graph paper for #5)***

p. 228 #9

a) $y = (x-4)^2$ v(4,0)



b) $y = -x^2 + 4$ v(0,4)



c) $y = -3(x+2)^2 + 8$

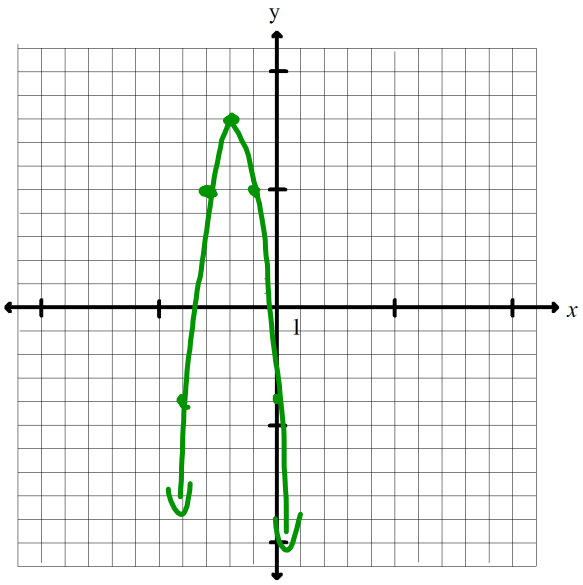
V(-2, 8) $a = -3$

MF

1 → 3

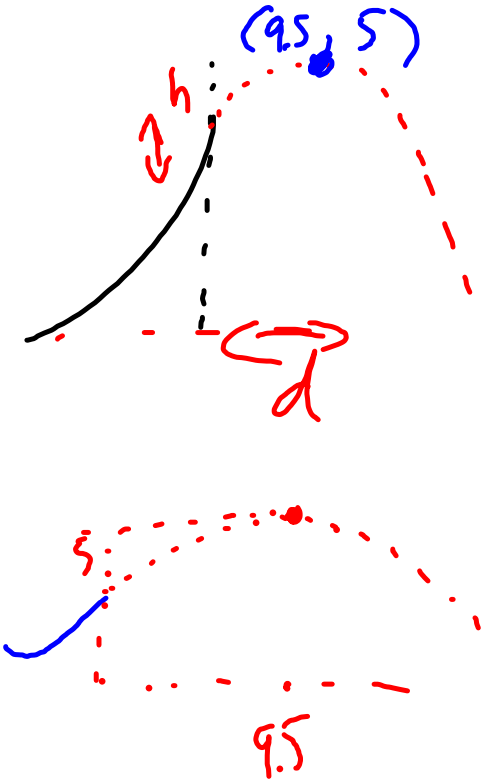
2 → 12

3 → 27



p.216 9abc

$h = -0.03(d-9.5)^2 + 5$



a) find h, if d=0

$h = -0.03(0-9.5)^2 + 5$

$= -0.03(-9.5)^2 + 5$

$\doteq 2.925$

$\doteq 2.3\text{m}$

p.224 #4 Fireworks

$h = -4.9(t-2)^2 + 169.6$

a) the max. height is 169.6 m

it takes 2 sec. to reach the max. height

4b) how high after 5 seconds?

if $t=5$, find h.

$h = -4.9(t-2)^2 + 169.6$

$= -4.9(5-2)^2 + 169.6$

$= -4.9(3)^2 + 169.6$

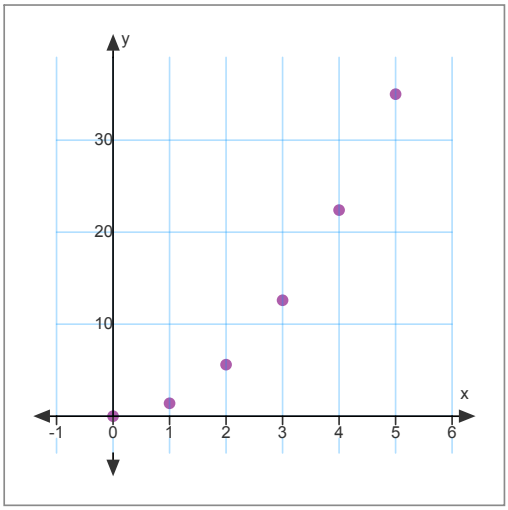
$\doteq 125.5$ ∴ at 5 seconds the rocket is 125.5 m above the water

From the 4.5 homework:
p.224 #5 Comparing Cars

Smart Car For two: $d=1.4t^2$

$d=14(\ )^2$

t	d
0	0
1	1.4
2	5.6
3	12.6
4	22.4
5	35



c)

speed =

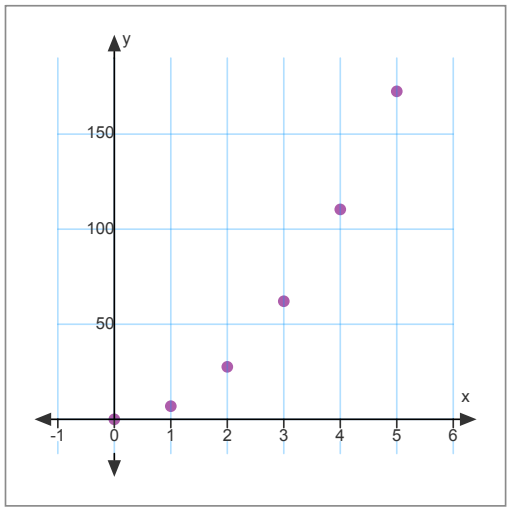
$\frac{22.4-1.4}{4-1}$

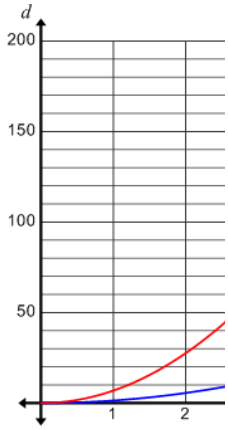
$= \frac{21}{3}$

$= 7\ m/s$

Tesla Roadster: $d=6.9t^2$

t	d
0	0
1	6.9
2	27.6
3	62.1
4	110.4
5	172.5





c) speed $= \frac{\Delta d}{\Delta t}$

$= \frac{110.4-6.9}{4-1}$

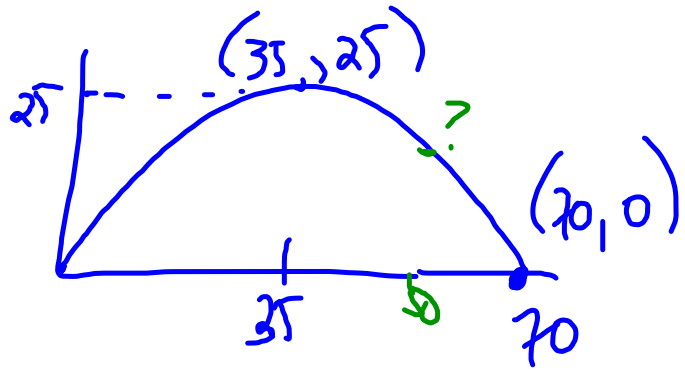
$= \frac{103.5}{3}$

$= 34.5\ m/s$

b) $172.5-35$

$\therefore$ difference $= 137.5\ m$

From the 4.5 homework:
p.228 #9



a) $y = a(x-h)^2 + k$ - 9 1

$y = a(x-35)^2 + 25$

$0 = a(70-35)^2 + 25$

$-25 = a(35)^2$

$-25 = a(1225)$

$\frac{-25}{1225} = a$

$a \doteq -0.0204$

$\therefore y = -0.0204(x-35)^2 + 25$

b) $x = 50$

$y = -0.0204(50-35)^2 + 25$

$= -0.0204(15)^2 + 25$

$=$

p. 226 #1 today's work

a) $y = 3x - 15$ NO!

b) $y = 4x^2 - 2x + 8$ Yes!

c)

x	y
-5	1
0	4
5	16
10	64
15	256

1st Differences: $4-1=3$, $16-4=12$, $64-16=48$, 192

2nd Diff.: 9, 36, 144

∴ 2nd Diff. are NOT constant

∴ the table does not represent a quadratic.