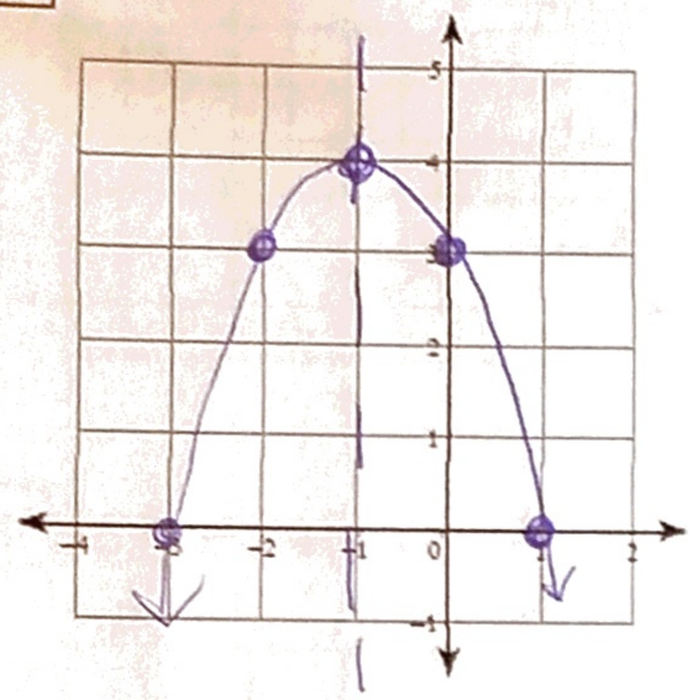
See next pages for work

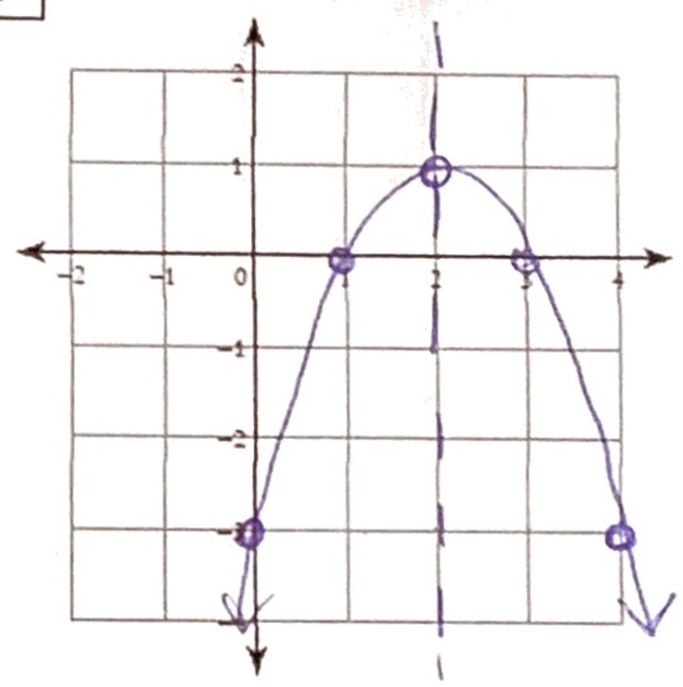
Name: _____ **Date:** _____ **#66 Graph from Standard Form**

Graph each quadratic function. On your own paper, show your work to find the axis of symmetry, vertex, and any other points you use to graph it.

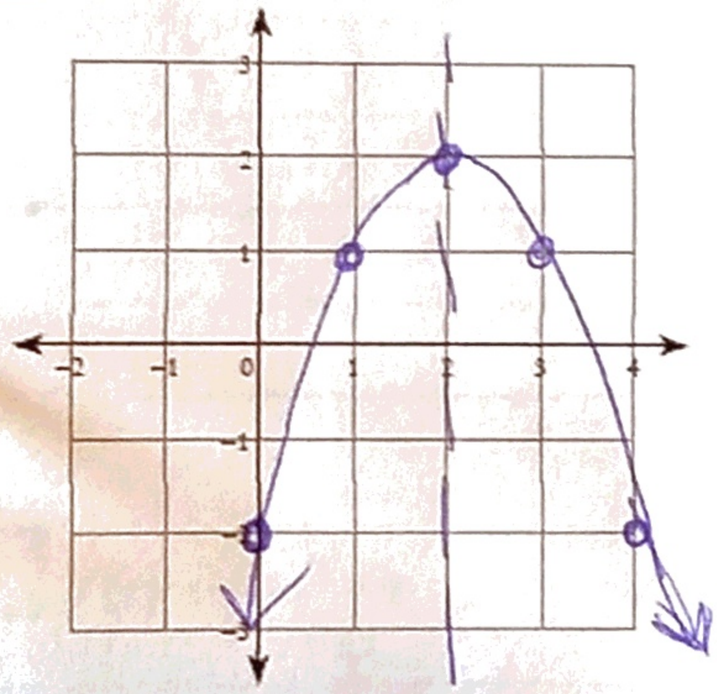
1) $f(x) = -x^2 - 2x + 3$



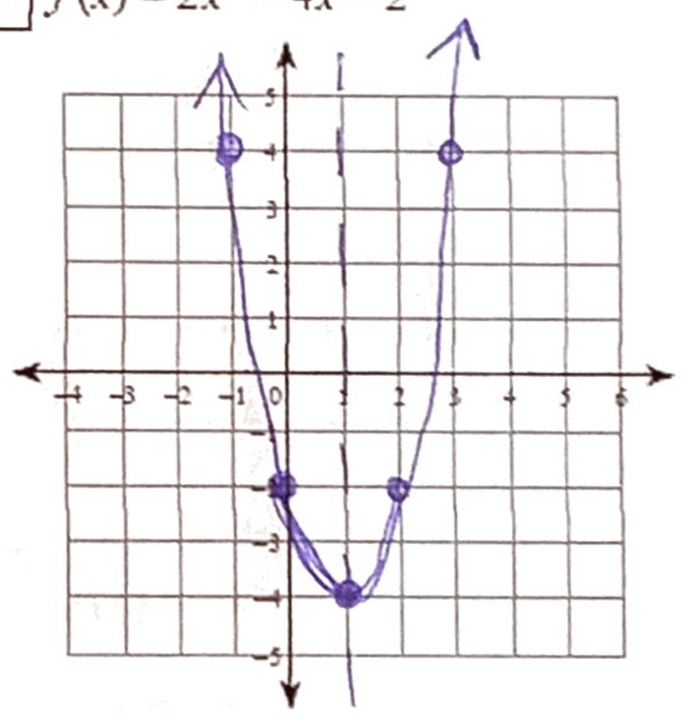
2) $f(x) = -x^2 + 4x - 3$



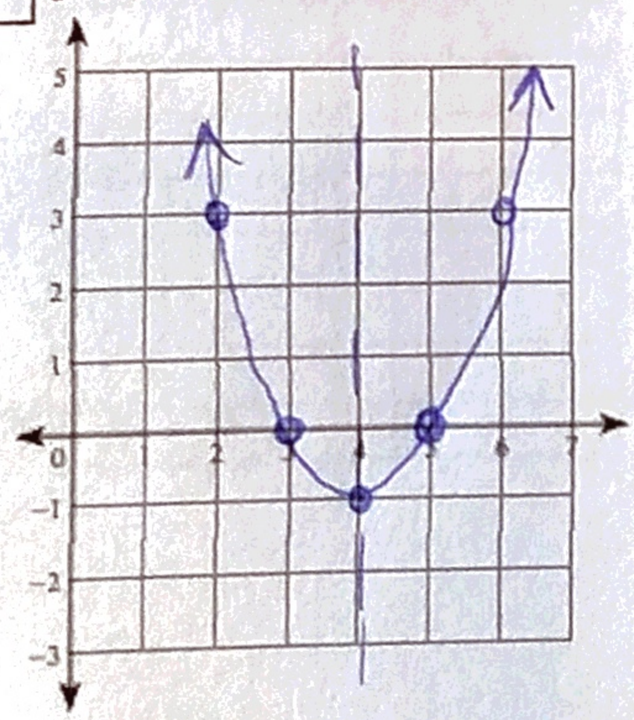
3) $f(x) = -x^2 + 4x - 2$



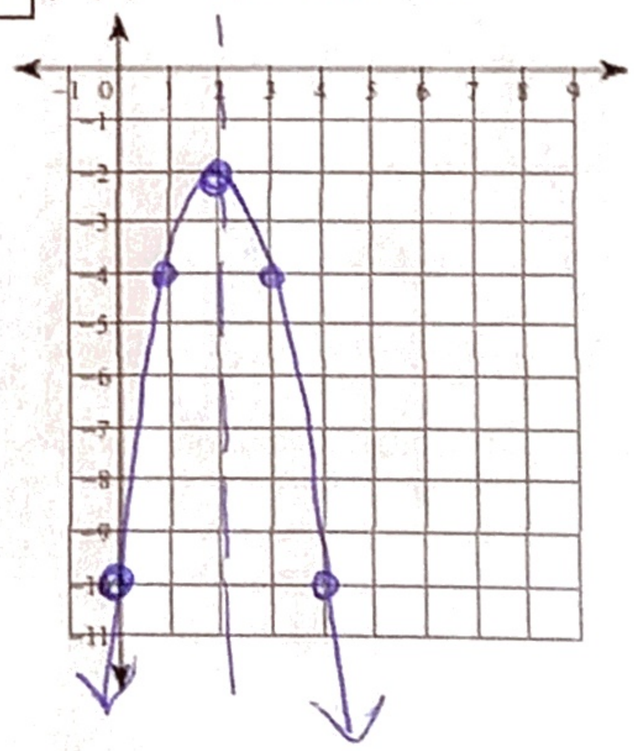
4) $f(x) = 2x^2 - 4x - 2$



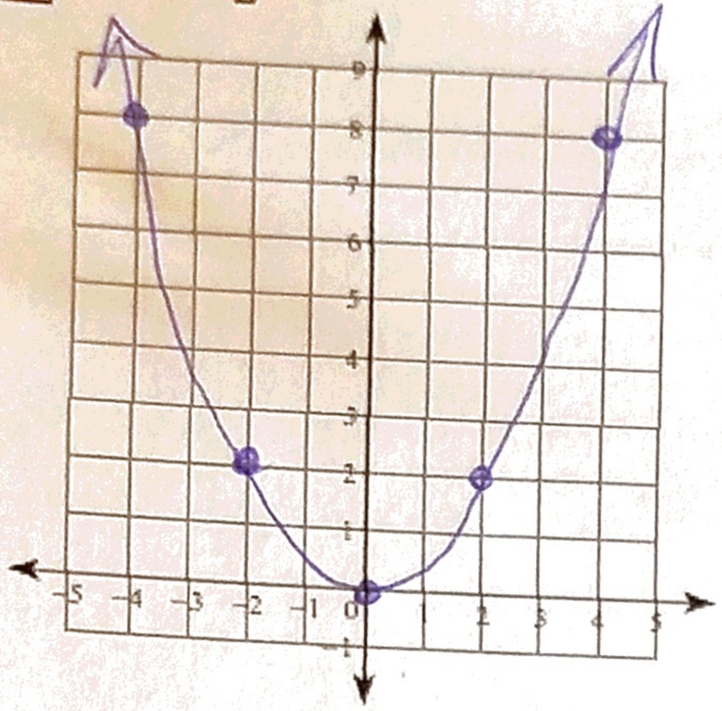
5) $f(x) = x^2 - 8x + 15$



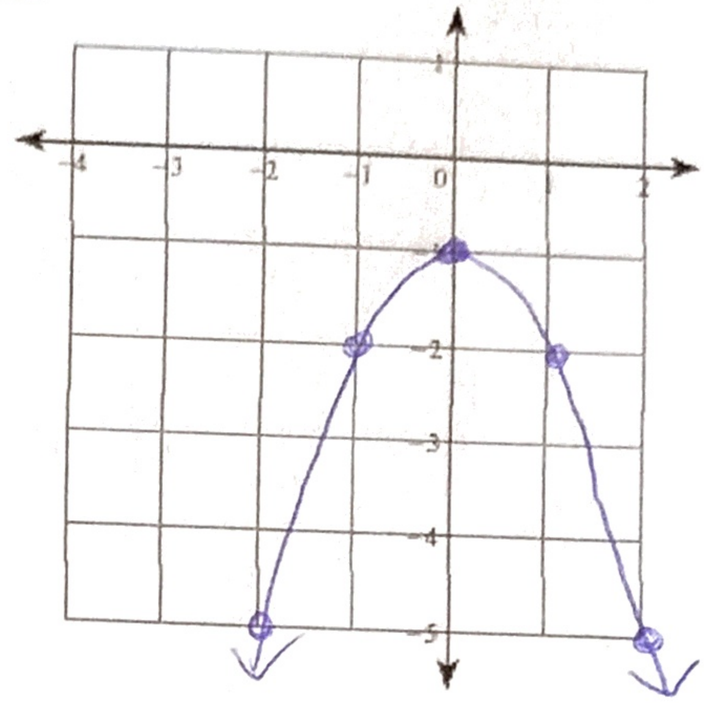
6) $f(x) = -2x^2 + 8x - 10$



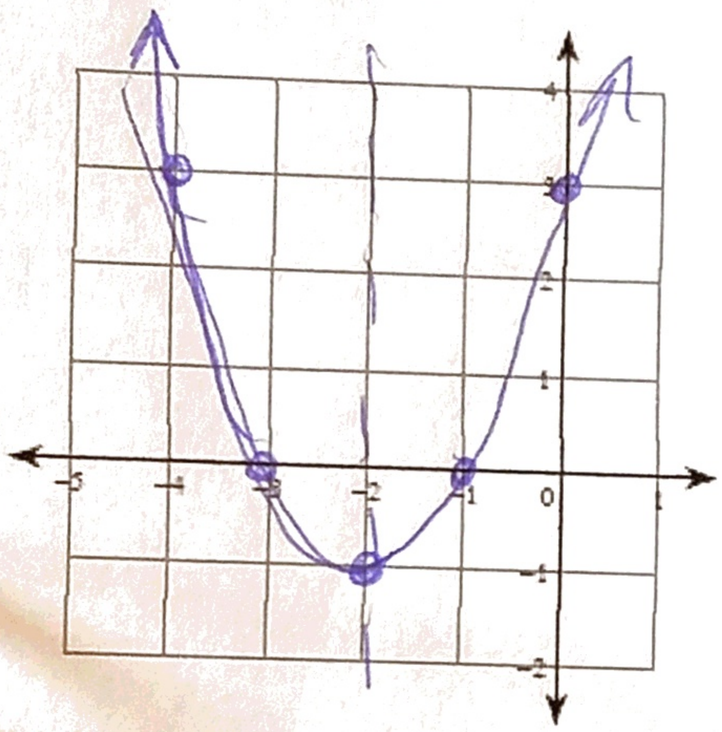
7) $f(x) = \frac{1}{2}x^2$



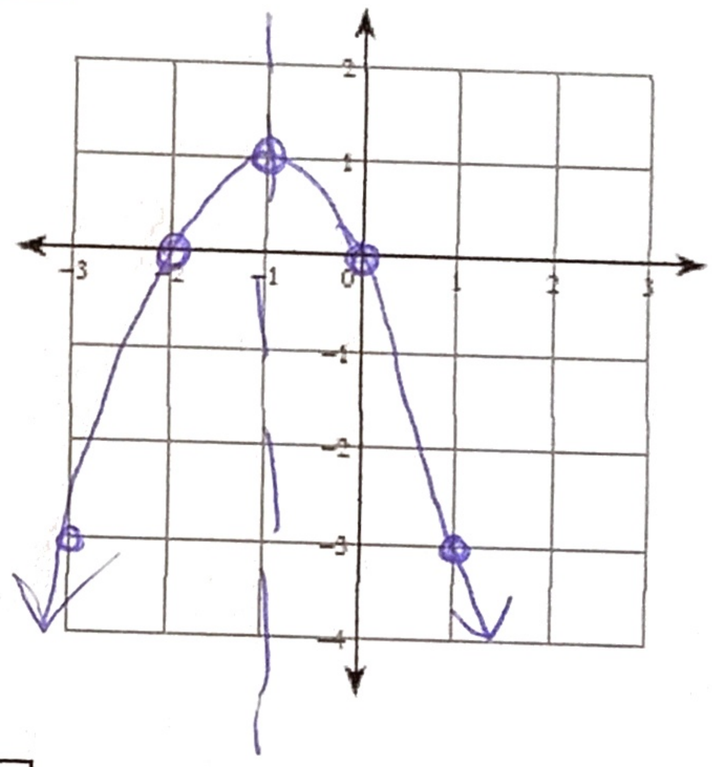
8) $f(x) = -x^2 - 1$



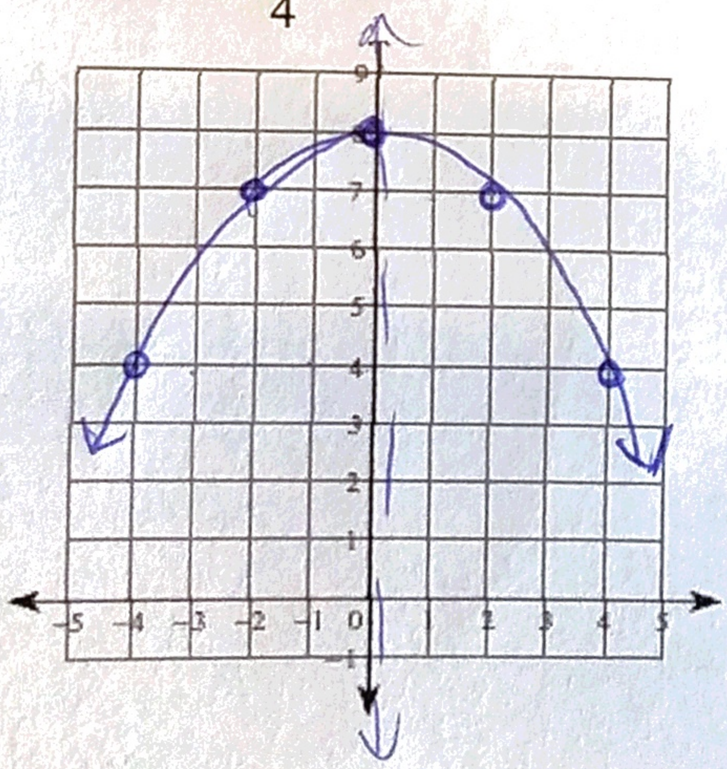
9) $f(x) = x^2 + 4x + 3$



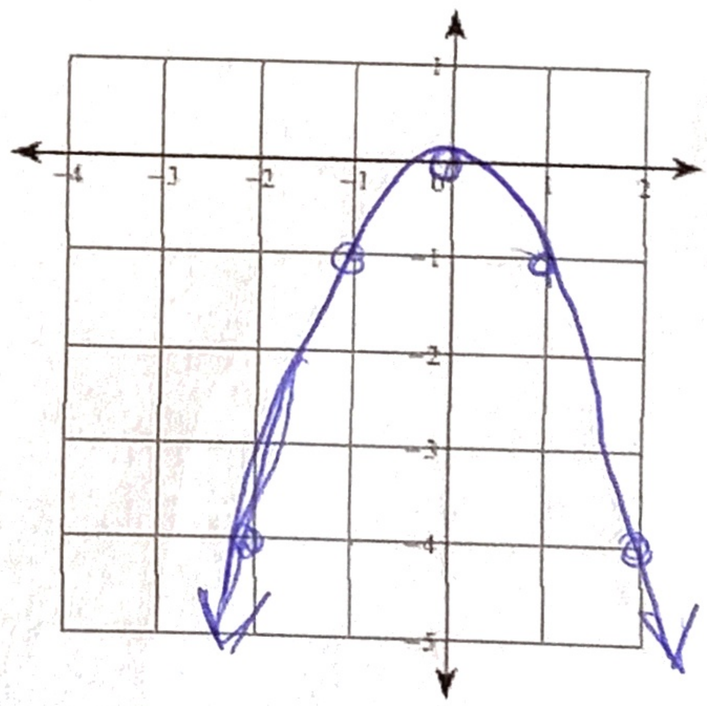
10) $f(x) = -x^2 - 2x$



11) $f(x) = -\frac{1}{4}x^2 + 8$



12) $f(x) = -x^2$



a.o.s. $x = \frac{-b}{2a}$

HW #1 Solo

① $f(x) = -x^2 - 2x + 3$

$a = -1$

$b = -2$

$c = 3$

yint $(0, 3)$

a.o.s. $x = \frac{+2}{2(-1)} \Rightarrow \frac{2}{-2}$ $x = -1$

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

$= -1 + 2 + 3$ $(-1, 4)$

$= 4$

additional pt $f(1) = -(1)^2 - 2(1) + 3$

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

$= 0$

② $f(x) = -x^2 + 4x - 3$

$a = -1$

$b = 4$

$c = -3$

yint $(0, -3)$

a.o.s. $x = \frac{-4}{2(-1)} \Rightarrow \frac{-4}{-2}$ $x = 2$

vertex $f(2) = -(2)^2 + 4(2) - 3$ $(2, 1)$

$= -4 + 8 - 3$

$= 1$

additional pt $f(1) = -(1)^2 + 4(1) - 3$

$= -1 + 4 - 3$ $(1, 0)$

$= 0$

③ $f(x) = -x^2 + 4x - 2$

$a = -1$

$b = 4$

$c = -2$

yint $(0, -2)$

a.o.s. $x = \frac{-4}{2(-1)} \Rightarrow \frac{-4}{-2}$ $x = 2$

vertex $f(2) = -(2)^2 + 4(2) - 2$ $(2, 2)$

$= -4 + 8 - 2$

$= 2$

additional pt $f(1) = -(1)^2 + 4(1) - 2$

$= -1 + 4 - 2$ $(1, 1)$

$= 1$

(4) $f(x)=2x^2-4x-2$

$a=2$

$b=-4$

$c=-2$

y int $(0,-2)$

a.o.s. $x=\frac{+4}{2(2)} \Rightarrow \frac{4}{4}$ $x=1$

vertex $f(1)=2(1)^2-4(1)-2$

$=2(1)-4-2$ $(1,-4)$

$=2-6$

$=-4$

additional pt $f(3)=2(3)^2-4(3)-2$

$=2(9)-12-2$ $(3,4)$

$=18-14$

$=4$

(5) $f(x)=x^2-8x+15$

$a=1$

$b=-8$

$c=15$

y int $(0,15)$ (off graph)

a.o.s. $x=\frac{+8}{2(1)} \Rightarrow \frac{8}{2}$ $x=4$

vertex $f(4)=(4)^2-8(4)+15$ $(4,-1)$

$=16-32+15$

$=-1$

additional pt $f(6)=(6)^2-8(6)+15$ since $a=1$ $(5,0)$

$=36-48+15$ $(6,3)$ initial ratio from

$=3$ vertex is 1 to 1

(6) $f(x)=-2x^2+8x-10$

$a=-2$

$b=8$

$c=-10$

y int $(0,-10)$

a.o.s. $x=\frac{-8}{2(-2)} \rightarrow \frac{-8}{-4}$ $x=2$

additional pt

$f(1)=-2(1)^2+8(1)-10$

$=-2(1)+8-10$

$=-2-2$

$=-4$ $(1,-4)$

vertex $f(2)=-2(2)^2+8(2)-10$

$=-2(4)+16-10$ $(2,-2)$

$=-8+16$

$=-2$

(7) $f(x) = \frac{1}{2}x^2$

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

$b = 0$

$c = 0$

y int (0,0)

a.o.s. $x = \frac{-0}{2(\frac{1}{2})}$ $x = 0$

Vertex (0,0)

$f(2) = \frac{1}{2}(2)^2$
$= \frac{1}{2}(4)$
$= 2$
(2,2)

$f(4) = \frac{1}{2}(4)^2$
$= \frac{1}{2}(16)$
$= 8$
(4,8)

(8) $f(x) = x^2 - 1$

$a = -1$

$b = 0$

$c = -1$

y int (0,-1)

a.o.s. $x = \frac{0}{2(-1)}$ $x = 0$

Vertex (0,-1)

$f(1) = -(1)^2 - 1$
$= -1 - 1$
$= -2$
(1,-2)

$f(2) = -(2)^2 - 1$
$= -4 - 1$
$= -5$
(2,-5)

(9) $f(x) = x^2 + 4x + 3$

$a = 1$

$b = 4$

$c = 3$

y int (0,3)

a.o.s. $x = \frac{-4}{2(1)} \Rightarrow \frac{-4}{2}$ $x = -2$

Vertex $f(-2) = (-2)^2 + 4(-2) + 3$
$= 4 - 8 + 3$
$= -1$
(-2,-1)

additional pt
$f(-1) = (-1)^2 + 4(-1) + 3$
$= 1 - 4 + 3$
$= 0$
(-1,0)

(10) $f(x) = -x^2 - 2x$

$a = -1$

$b = -2$

$c = 0$

y int (0,0)

a.o.s. $x = \frac{+2}{2(-1)} \Rightarrow \frac{2}{-2}$ $x = -1$

vertex $f(-1) = -(-1)^2 - 2(-1)$
$= -1 + 2$
$= 1$
(-1,1)

additional pt
$f(1) = -(1)^2 - 2(1)$
$= -1 - 2$
$= -3$
(1,-3)

(11) $f(x) = -\frac{1}{4}x^2 + 8$ could be seen as vertex form... vertex $(0, 8)$ ← also y int b/c c=8

$f(2) = -\frac{1}{4}(2)^2 + 8$
$= -\frac{1}{4}(4) + 8$
$= -1 + 8$
$= 7$
$(2, 7)$

$f(4) = -\frac{1}{4}(4)^2 + 8$
$= -\frac{1}{4}(16) + 8$
$= -4 + 8$
$= 4$
$(4, 4)$

(12) $f(x) = -x^2$ I bet you're tired of graphing like I am. It's the parent flipped upside down.