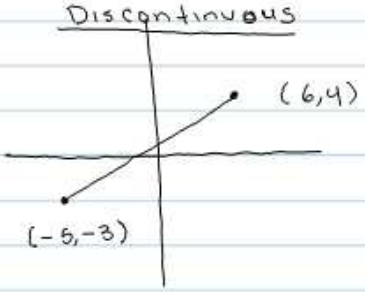
Alg. II
10/12/11
B3

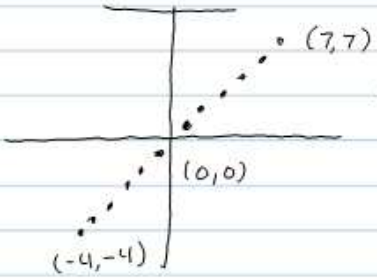
Review

- All relations are functions but not all functions are relations.

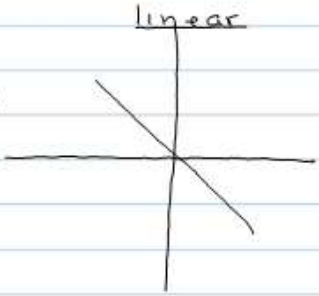
Discontinuous



Discrete



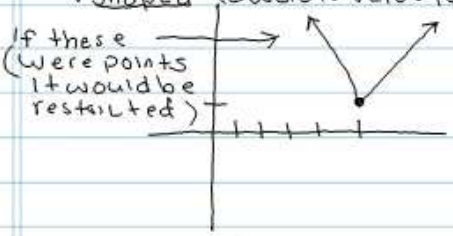
linear



D = all real #s
R = all real #s

D $\{-5 \leq x \leq 6$
R $\{-3 \leq y \leq 4$

V shaped (absolute value function) $f(x) = a|x-h|+k$



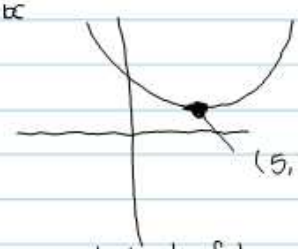
$f(x) = |x|$

$f(x) = |x-5|+1$

D = all real #'s
R = all real # ≥ 1
$y \geq 1$

* "a" controls direction opens ↑ or ↓ when + or −
$f(x) = ?|x-h|+k$
(+)
V ∪ a(+)
$f(x) = -1$ " 1 "
∧ ∩ a(−)

U shaped (quadratic function)
Perobalic



$f(x) = (x-5)^2+1$

D = all real #'s
R = all real #'s ≥ 1

* h controls horizontal shift
(h(+)) ⟶
(h(−)) ⟵

* k controls verticals

It also controls the shape, slope is steeper

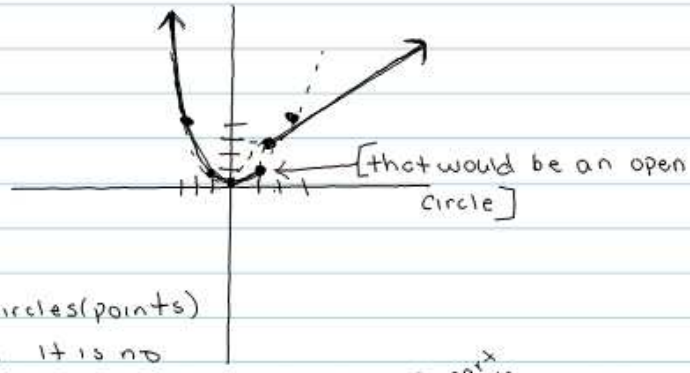
Ashley Keenan

10/20/11
B3 ALG II
Mr. Lalim

Piecewise Functions

$$f(x) = \begin{cases} x+2 \; ; \; x \geq 1 \\ x^2 \; ; \; x < 1 \end{cases}$$

$y = x + 2$

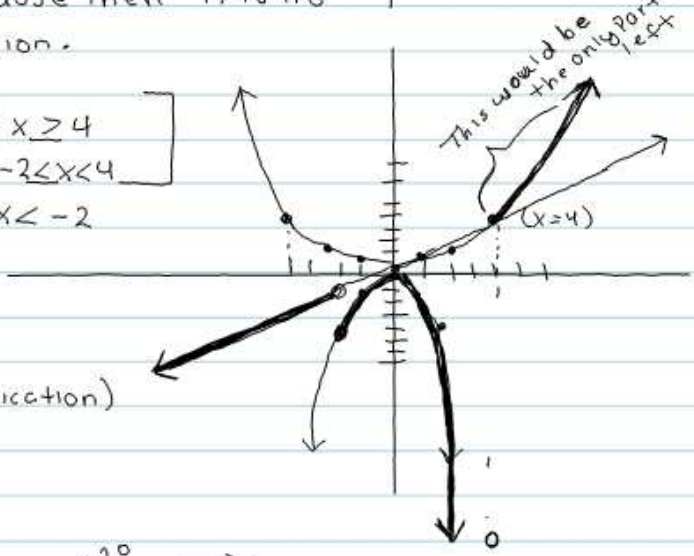


(open circle) $O = <$ or $>$

(closed circle) $\bullet = \leq$ or $\geq$

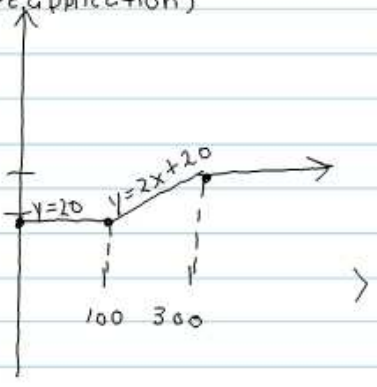
* You can not have 2 open circles (points) on a graph because then it is no longer a function.

$$f(x) = \begin{cases} \frac{1}{4}x^2 \; ; \; x \geq 4 \\ -x^2 \; ; \; -3 \leq x < 4 \\ x \; ; \; x < -2 \end{cases}$$



X	Y
1	1/4
2	1
4	4

(real life application)



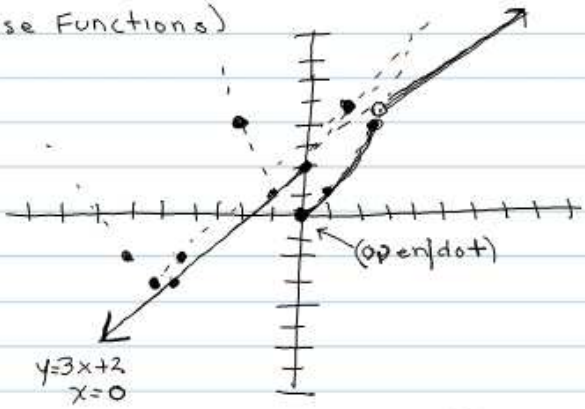
Ashley Keenan 10/24/11

Algebra II

(Piecewise Functions)

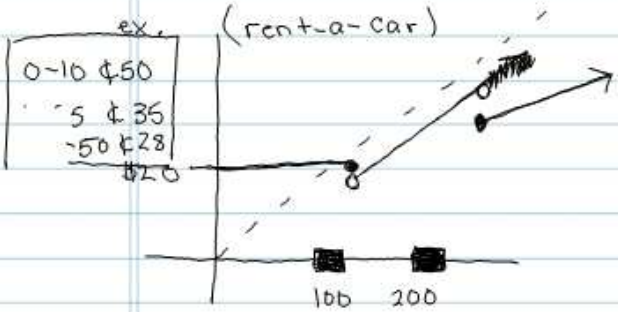
ex: $f(x) = \begin{cases} 3x+2 ; & x > 3 \\ x^2 ; & x < 4 \\ |x+5|-3 ; & x \leq 1 \end{cases}$

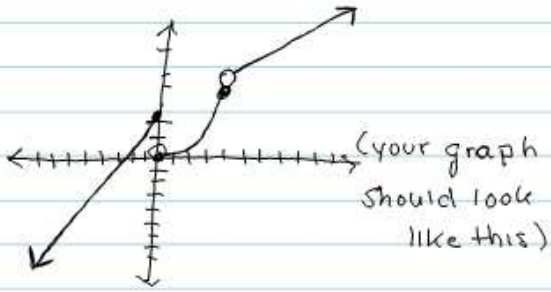
$f(x) = \begin{cases} 3x+2 ; & x \leq 0 \\ x^2 ; & 0 < x \leq 2 \\ |x+5|-3 ; & x > 2 \end{cases}$



x = domain • = ≤ or ≥

y = range o = < or >





$f(x) = 4$ (evaluate)

$f(x) = \begin{cases} 3x+2 ; & x \leq 0 \\ x^2 ; & 0 < x \leq 2 \\ |x+5|-3 ; & x > 2 \end{cases}$ ← only this one will go with 4

$|x+5|-3 = 6$

$|4+5|-3$

$f(x) = 4 = 6$

$f(x) = 1 = 1$

$f(x) = -3 = -7$

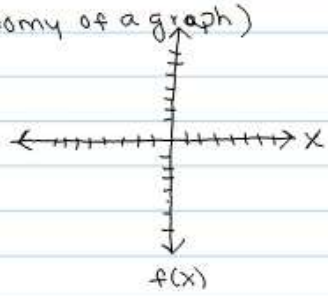
Ashley Keenon 10/24/11

AlG II B3

Graphing Quadratic Functions

- anatomy
  - axis of symmetry
  - Roots (Zeros)
  - Table of values
- Standard form
- Vertex form

(anatomy of a graph)



Vertex form
$f(x)=a(x-h)^2+k$

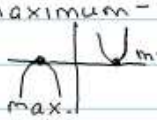
Standard form
$ax^2+bx+c=0$

quadratic term (ax^2) | Linear term (bx) | constant term (c)

Coefficients → NUMBERS

roots - (0's) The place where the function touches or cross the x axis.

Vertex - the highest or the lowe point on the graph
located @ the axis of symmetry
minimum - lowest
maximum - highest



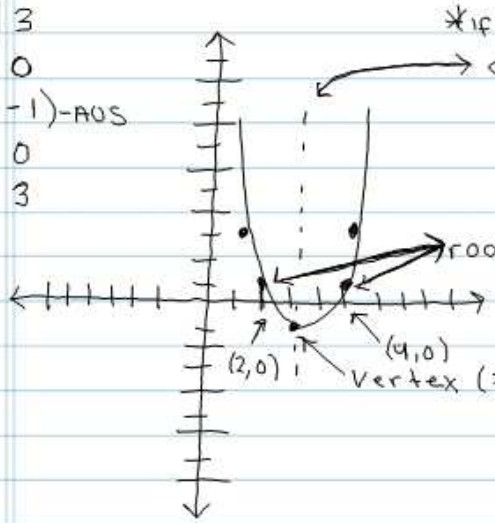
$f(x)=x^2-6x+8$

- Coefficient a=1
- Coefficient b=(-)6
- Coefficient c=8

AOS - x'value of the verte which allows you to find the "y" value of the vertex by substitution.

*if there are 2 roots, the aos is ½ way between the

x	y
0	8
1	3
2	0
(3	-1)-AOS
4	0
5	3



axsis of symmetry (noted as the x-value of the vertex)
X=3

roots → the location where the graph toches the x-a

Ashley Keenan

10/25/1

B3

Mr. Lalim

Algebra II

[Multiplication of binomials]

(distributing)

$3x(2+x) = 6x + 3x^2$

$3x(x^2+x+2)\ 3x^3 + 3x^2 + 6x$

explaining

Binomial multiplication:

monomial = 1 term [mono = 1] [nomial = term]

examples of monomials =

$2x \quad 2xyz \quad 2/3 \quad 2x^2yz$

binomial = 2 terms [bi = 2] [nomial = term]

examples of binomials =

$x-3 \quad 2x(x-3) \quad 2x^2 \quad 6x$

$2x + 3y + 2$

3 terms

$(x-3)^2 = (x-3)(x-3)$

* multiply everything times everything

2 binomials = a trinomial [usually]

Simplify (check)

$6g(-3h-4)$	$(3a-1)\quad(5a+6)$	$(c+5)(c^2+2c-6)$
$6g(-3h-4)$ $18gh-24g$ ✓	$(3a-1)(5a+6)$ $(3a-1)(5a+6)$ $15a^2+18a-5a-6$ $15a^2+13a-6$ ✓	$c^3+2c^2-6c+5c^2+10c-30$ $c^3+7c^2+4c-30$ ✓

when 0's are present it is still binomial

$c-30$

* Standard form

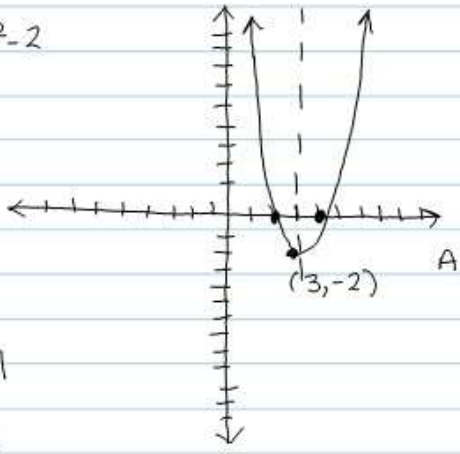
$f(x) = ax^2 + bx + c$

(quadratic) (linear) (Consta

Vertex form $f(x) = 2(x-3)^2 - 2$

$(+3, -2)$

x	y
1	6



$f(x) = ax^2 + bx + c$

$f(x) = 2x^2 - 12x + 16$

$x = 3$

AOS = $x = 3$

Standard form

$f(x) = ax^2 + bx + c$

* To find Axis of Symmetry from standard form $\frac{b}{}$

$x = -b/2a \qquad x = \frac{b}{2a}$

$(x+6)$ $(x+9)$

$x^2+6x+9x+54$

$g(x) = x^2+15x+54$

$= (-7.5^2)+15(-7.5)+54$

$56.25-112.5+54$

-2.25

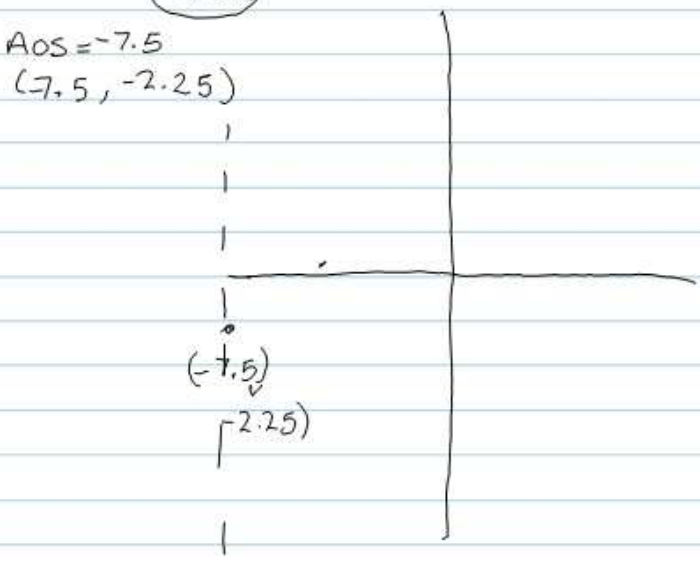
$x = \frac{-b}{2a}$

$\frac{-15}{2(1)} = \frac{-15}{2}$

-7.5

AOS $= -7.5$

$(-7.5, -2.25)$



Math

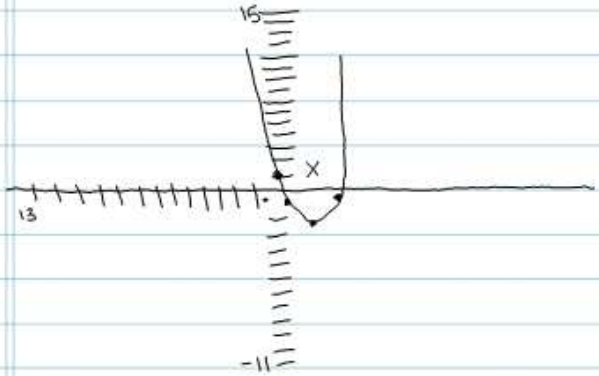
11/11/11 B

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

Vertex
~~Axis of Symmetry~~ $(3/2, -5/4)$
Axis of symmetry $3/2$

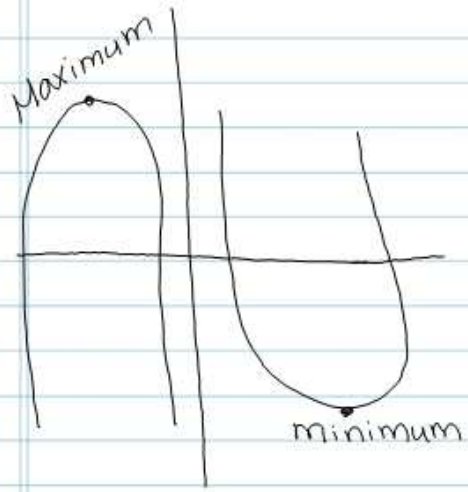
$x = 3/2$

$y = -5/4$



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

$\frac{-b}{2a}$ $\frac{4}{2(1)} = 2$



$f(x) = -2x^2 + 8x - 7$

$\frac{-b}{2a} = \frac{-8}{-2(2)} = \frac{-8}{-4} = 2$

$-2(2)^2 + 8(2) - 7$

$-8 + 16 - 7 = 1$

$(2, 1)$

$f(x) = x^2 - 6x - 1$

$f(x) = (x-3)^2 - 10$

$(x-3) \cdot (x-3)$

$x^2 - 3x - 3x + 9 - 10$

$x^2 - 6x - 1$