Quadratics: Put It Together REVIEW

Name Key

Date _____ Period _____

Rewrite each of the following equations in factored form. Sketch the graphs. Find the vertex using $(\frac{-b}{2a}, y)$.

1. $y = x^2 - 6x + 5$

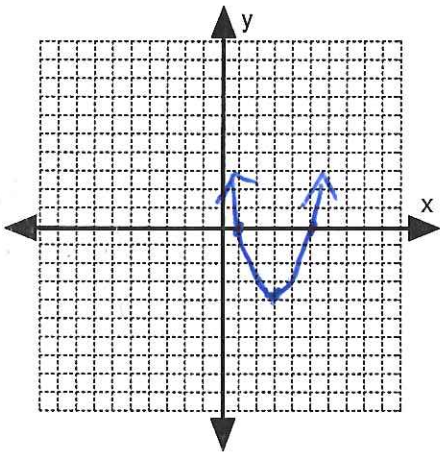
5, −5, −1, −6

Vertex: $a=1$ $b=-6$

$x = \frac{-(-6)}{2(1)} = \frac{6}{2} = 3$

$y = (3)^2 - 6(3) + 5$

$y = -4$



Factored form: $(x-5)(x-1) = y$

x-intercepts: $\{1, 5\}$

Vertex: $(3, -4)$

Solutions to $0 = x^2 - 6x + 5$

$x = 5$ and $x = 1$

2. $y = x^2 + 8x + 15$

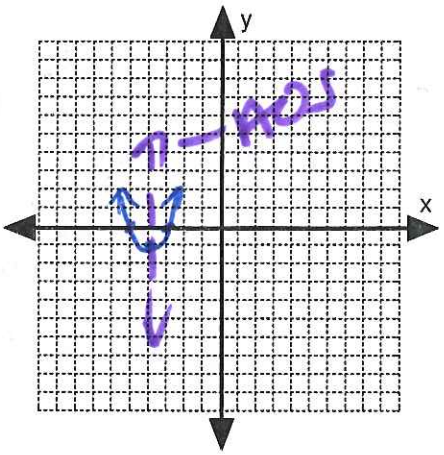
15, 5, 3, 8

Vertex: $a=1$ $b=8$

$x = \frac{-(8)}{2(1)} = -4$

$y = (-4)^2 + 8(-4) + 15$

$y = -1$



Factored form: $(x+5)(x+3) = y$

x-intercepts: $(-5, 0)$ $(-3, 0)$

Vertex: $(-4, -1)$

Solutions to

$0 = x^2 + 8x + 15$

$x = -3$ and $x = -5$

3. $y = x^2 + 10x + 21$

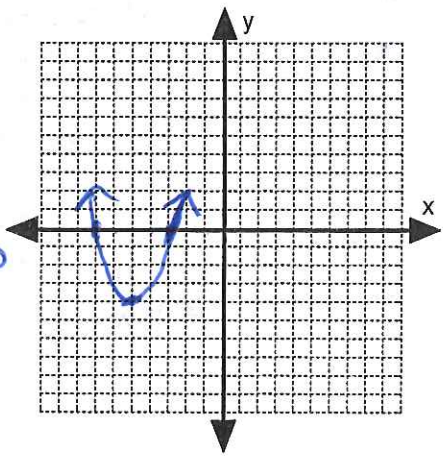
21, 7, 3, 10

Vertex: $a=1$ $b=10$

$x = \frac{-10}{2(1)} = -5$

$y = (-5)^2 + 10(-5) + 21$

$y = -4$



Factored form: $(x+7)(x+3) = y$

x-intercepts: $(-7, 0)$ $(-3, 0)$

Vertex: $(-5, -4)$

Solutions to

$0 = x^2 + 10x + 21$

$x = -7$ and $x = -3$

Complete parts a – e for numbers 4 – 9.

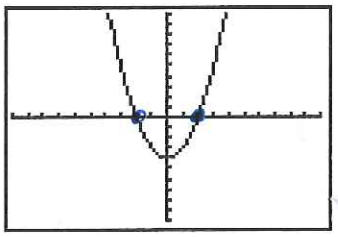
a. Write the equation in factored/standard form.
b. Name the vertex of the function.
c. Is the vertex a maximum or a minimum point?
d. Write the equation of the axis of symmetry. $x = \frac{b}{2a}$
e. Name the coordinates of the x–intercepts.

$x = \frac{-b}{2a} = \frac{0}{2(1)} = 0$

4. $y = (x+2)(x-2)$

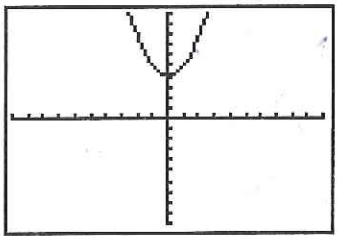
F O I L
$x^2 - 2x + 2x - 4$

a. $y = x^2 - 4$
b. $(0, -4)$
c. min
d. $x = 0$
e. $(-2, 0)\ (2, 0)$



5. $y = x^2 + 4$

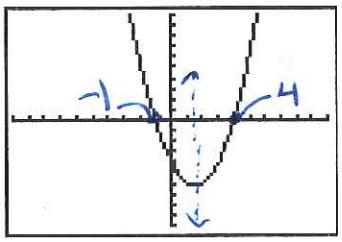
a. prime
b. $(0, 4)$
c. min
d. $x = 0$
e. none



6. $y = (x-4)(x+1)$

F O I L
$x^2 + x - 4x - 4$

a. $y = x^2 - 3x - 4$
b. $(1.5, -6.25)$
c. min
d. $x = 1.5$
e. $(4, 0)\ (-1, 0)$



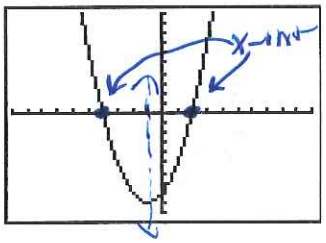
AOS $x = \frac{-(-3)}{2(1)} = 1.5$

vertex $y = (1.5)^2 - 4(1.5) - 4$
$y = -6.25$

7. $y = (x-2)(x+4)$

F O I L
$x^2 + 4x - 2x - 8$

a. $y = x^2 + 2x - 8$
b. $(-1, -9)$
c. min
d. $x = -1$
e. $(2, 0)\ (-4, 0)$



AOS: $x = \frac{-(+2)}{2(1)} = -1$

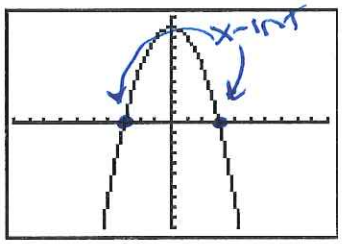
vertex: $y = (-1)^2 + 2(-1) - 8$
$y = -9$

or look up in table

8. $y = -(x-3)(x+3)$

F O I L
$-[x^2 + 3x - 3x - 9]$

a. $y = -x^2 + 9$
b. $(0, 9)$
c. max
d. $x = 0$
e. $(-3, 0)\ (3, 0)$

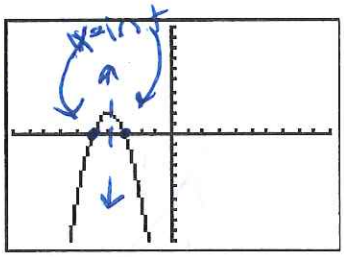


vertex: $y = -(0)^2 + 9$
$y = 9$

9. $y = -2(x+3)(x+5)$

F O I L
$-2[x^2 + 5x + 3x + 15]$
$8x$

a. $y = -2x^2 - 16x - 30$
b. $(-4, 2)$
c. max
d. $x = -4$
e. $(-3, 0)\ (-5, 0)$



AOS: $x = \frac{-(-16)}{2(-2)} = -4$

vertex: $y = -2(-4)^2 - 16(-4) - 30$
$y = 2$

Use ZPP zero product property

10. For the equation $y = (x - 9)(x + 4)$, name the roots. → x-intercepts / use ZPP

$x-9=0$ $x+4=0$

$x=9$ $x=-4$

11. When the function $f(x) = (x + 6)(x - 6)$ is graphed, name the x–intercepts.

$x+6=0$ $x-6=0$

$x=-6$ $x+6$

12. When the equation $y = -2(x - 3)(x + 5)$ is graphed, name the x-intercepts.

$x-3=0$ $x+5=0$

$x=3$ $x=-5$

13. Find the zeros of $f(x) = (x + 8)(x - 8)$. → x-intercepts

$x+8=0$ $x-8=0$

$x=-8$ $x=8$

Sketch the following graphs using the x-intercepts and the vertex. → use calc to find pts

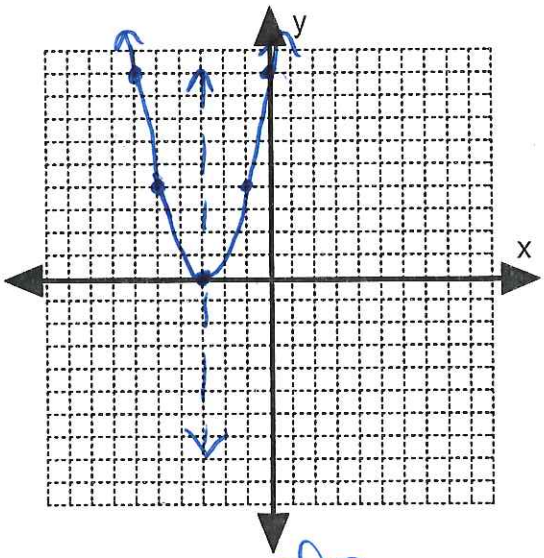
14. $y = (x+3)^2$ $(x+3)(x+3)$

F O I L

$x^2+3x+3x+9$

Standard Form: x^2+6x+9

Vertex: $(-3, 0)$



on calc

x	y
-5	4
-3	0
-1	4
0	9

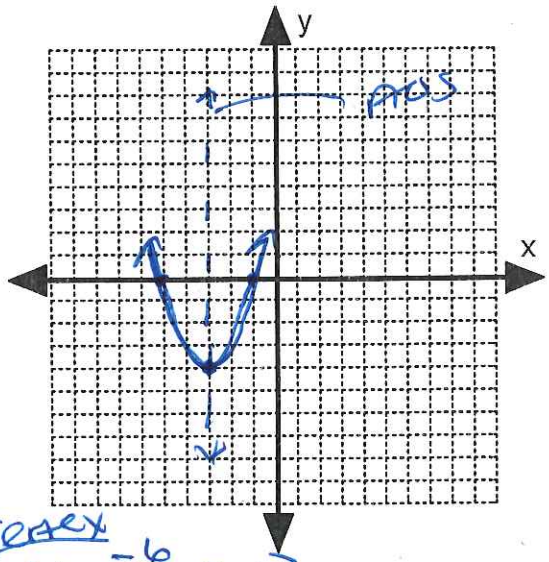
15. $y = (x+1)(x+5)$

F O I L

$x^2+5x+x+5$

Standard Form: x^2+6x+5

Vertex: $(-3, -4)$



vertex

$x = \frac{-6}{2(1)} = -3$

$y = (-3)^2 + 6(-3) + 5$

$y = -4$