Name Key Date _____ Hour _____

Factoring/Solving Review Plus More

1. Describe the differences between $y = (x+3)^2$ and $y = (x+3)^2 - 5$

not down 5 down 5

Write each function in vertex form.

2. $y = 2x^2 - 4x - 4$

$\frac{4}{2(2)} = 1$ $(1, -6)$

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

3. $y = -5x^2 - 20x - 4$

$\frac{20}{-10} = -2$ $(-2, 16)$

$y = -5(x+2)^2 + 16$

For #4 and5, graph each function. Identify the AOS, Vertex, Y-intercept and a random point if needed. Then sketch the graph. This should be done without graphing it on a calculator. Show your work for all parts.

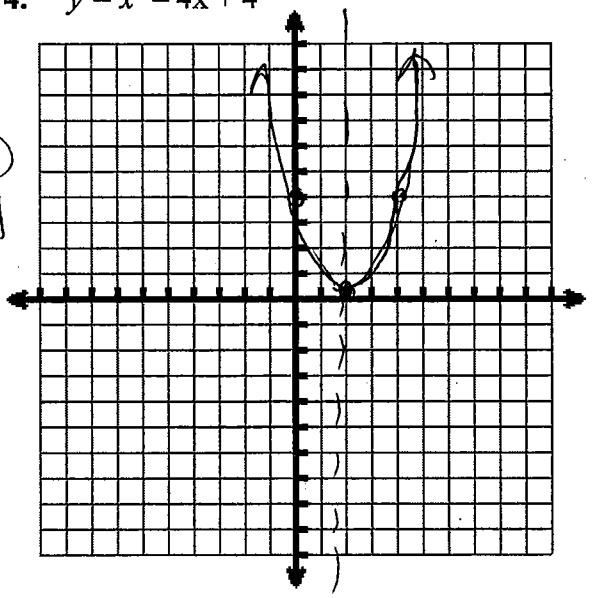
$\frac{4}{2(1)}$

4. $y = x^2 - 4x + 4$

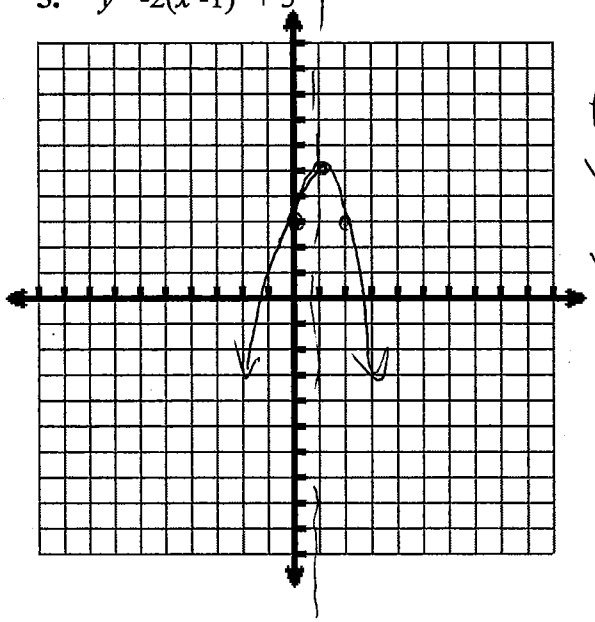
AOS: 2

Vertex (2, 0)

Y-int: 4



5. $y = -2(x-1)^2 + 5$



AOS: x=1

Vert (1, 5)

Y-int (0, 3)

6. Suppose you throw a ball straight up from the ground with a velocity of 80 ft/s. As the ball moves upward, gravity slows it. Eventually the ball begins to fall back to the ground. The height h of the ball after t seconds in the air is given by the quadratic equation $h(t) = -16t^2 + 80t$.

At what time does the ball reach its maximum height? What is that height?

$\frac{-80}{2(-16)} = 2.5$ ~~(2.5, 100)~~

2.5 secs, 100 ft

Solve each by factoring.

1) $x^2 - 9x + 18 = 0$

$(x-6)(x-3)=0$

$x=6 \quad x=3$

2) $x^2 + 5x + 4 = 0$

$(x+4)(x+1)=0$

$x=-4, \quad x=-1$

13) $3m^2 = -16m - 21$

$3m^2+16m+21=0$

$3m^2$	$9m$	$3m$
$7m$	21	$+7$

$m+3$

63
$9 \quad 7$

$(m+3)(3m+7)=0$

$m=-3, \quad m=-7/3$

14) $8x^2 = 30 + 43x$

$8x^2-43x-30=0$

$8x^2$	$-48x$	$8x$
$5x$	-30	5

$x-6$

-240
$-48 \quad 5$

$(x-6)(8x+5)=0$

$x=6 \quad x=-5/8$

17) $2k^2 - 14 = -3k$

$2k^2+3k-14=0$

$2k^2$	$7k$	k
$-4k$	-14	-2

$2k+7$

-28
$7 \quad -4$

$(k-2)(2k+7)=0$

$k=2 \quad k=-7/2$

18) $3v^2 + 36v + 49 = 8v$

$3v^2+28v+49=0$

$3v^2$	$7v$	v
$21v$	49	$+7$

$3v+7$

147
$7 \quad 21$

$(3v+7)(v+7)=0$

$v=-7/3 \quad v=-7$

19) $4x^2 - 3x - 81 = -3x$

$4x^2-81=0$

$4x^2$	$18x$	$2x$
$-18x$	-81	-9

$2x+9$

324
$18 \quad -18$

$(2x+9)(2x-9)=0$

$x=9/2 \quad x=-9/2$

20) $5m^2 + 15m - 48 = 5m - 8$

$5m^2+10m-40=0$

$5(m^2+2m-8)=0$

$5(m+4)(m-2)=0$

~~$5=0$~~ $\quad m=-4 \quad m=2$