

Name _____

Date _____

Advanced Algebra

Unit 4: Quadratics

Classwork/Assignment #11

Fully factorize by first removing a common factor:

$3x^2+5x$ $x(3x+5)$	$2x^2-7x$ $x(2x-7)$	$3x^2+6x$ $3x(x+2)$
$4x^2-8x$ $4x(x-2)$	$-2x^2+9x$ $x(-2x+9)$	$-3x^2-15x$ $-3x(x+5)$
$-4x+8x^2$ $-4x(1+2x)$	$-5x-10x^2$ $-5x(1+2x)$	$12x-4x^2$ $4x(3-x)$
x^3+x^2+x $x(x^2+x+1)$	$2x^3+11x^2+4x$ $x(2x^2+11x+4)$	$ab+ac+ad$ $a(b+c+d)$
ax^2+2ax $ax(x+2)$	ab^2+a^2b $ab(b+a)$	ax^3+ax^2 $ax^2(x+1)$

I can easily go from General form to Vertex form: (Good time to use Complete the Square)

Put the following problems into vertex form and find the x intercepts. This should be done quickly!

1) $y=x^2+4x+3$ $(x^2+4x+4) - 4 + 3$

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

$$x = -2 \pm \sqrt{1}$$

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

$$y = (x+4.5)^2 - .25$$

$$x = -4.5 \pm \sqrt{.25}$$

2) $y=x^2+11x+24$ $(x^2+11x+30.25) - 30.25 + 24$

$$y = (x+5.5)^2 - 6.25$$

$$x = -5.5 \pm \sqrt{6.25}$$

4) $y=x^2+15x+54$

$$y = (x+4)^2 - 1$$

$$x = -4 \pm \sqrt{1}$$

$$(x^2+15x+56.25) - 56.25 + 54$$

5) $y = x^2 + 9x + 20$

$(x^2 + 9x + \frac{20.25}) - \frac{20.25}{} + 20$

$(x + 4.5)^2 - .25$

$x = -4.5 \pm \sqrt{.25}$

6) $y = x^2 + 8x + 15$

$(x^2 + 8x + 16) - 16 + 15$

$(x + 4)^2 - 1$

$x = -4 \pm 1$

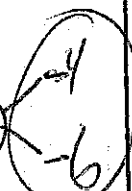


7) $y = x^2 + 10x + 24$

$(x^2 + 10x + 25) - 25 + 24$

$(x + 5)^2 - 1$

$x = -5 \pm 1$



8) $y = x^2 + 9x + 14$

$(x^2 + 9x + \frac{20.25}) - \frac{20.25}{} + 14$

$(x + 4.5)^2 - 6.25$

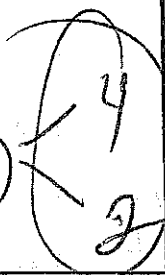
$x = -4.5 \pm \sqrt{6.25}$

9) $y = x^2 - 6x + 8$

$(x^2 - 6x + 9) - 9 + 8$

$(x - 3)^2 - 1$

$x = 3 \pm 1$

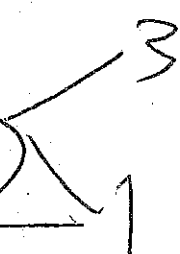


10) $y = x^2 - 4x + 3$

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

$(x - 2)^2 - 1$

$x = 2 \pm 1$



11) $y = x^2 - 8x + 4$

$(x^2 - 8x + 16) - 16 + 4$

$(x - 4)^2 - 12$

$x = 4 \pm \sqrt{12}$

12) $y = x^2 + 14x + 36$

$(x^2 + 14x + 49) - 49 + 36$

$(x + 7)^2 - 13$

$x = -7 \pm \sqrt{13}$

Use the discriminant ($b^2 - 4ac$) to determine if it has roots

a) If it has roots, write it in vertex form and then find the roots.

13) $y = x^2 - 18x + 6$

$18^2 - 4(1)(6)$

discriminant

300

Does it have roots

yes

Roots:

$x = 9 \pm \sqrt{75}$

$(x^2 - 18x + 81) - 81 + 6$

$(x - 9)^2 - 75$

14) $y = x^2 + 12x + 4$

discriminant

$144 - 4(1)(4) = 136$

Does it have roots

yes

Roots

$(x + 6)^2 - 32$

$x = -6 \pm \sqrt{32}$

$(x^2 + 12x + 36) - 36 + 4$