Name: Key
Unit 9

Date:
Lesson 3

DO NOW: Which equation is represented the following graph?

a) $y = -x^2 + x - 6$

b) $y = x^2 - x + 6$

c) $y = x^2 + x - 6$

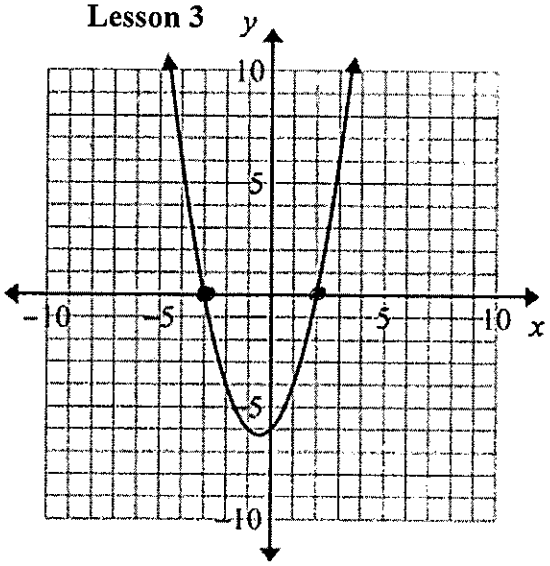
d) $y = x^2 + x + 6$

$x = -3 \quad x = 2$

$(x+3)(x-2) = 0$

$x^2 - 2x + 3x - 6 = y$

$x^2 + x - 6 = y$



AIM: WRITING A QUADRATIC EQUATION WHEN GIVEN THE ROOTS

1. Write the quadratic equation whose roots are 5 & 7. $x = 5 \quad x = 7$

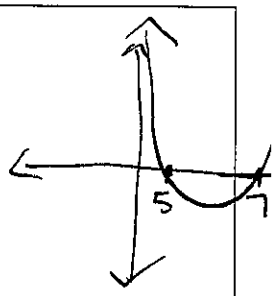
$(x-5)(x-7) = 0$

$x^2 - 5x - 7x + 35 = 0$

$x^2 - 12x + 35 = 0$

$(x-5)$	
x^2	$-5x$
$-7x$	$+35$

x | -7



2. Write the quadratic equation whose roots are $\{-2, 6\}$. $x = -2 \quad x = 6$

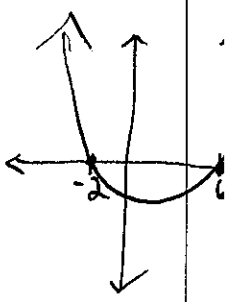
$(x+2)(x-6) = 0$

$x^2 - 6x + 2x - 12 = 0$

$x^2 - 4x - 12 = 0$

$x+2$	
x^2	$2x$
$-6x$	-12

x | -6



3. Write the quadratic equation whose root is 9. double root

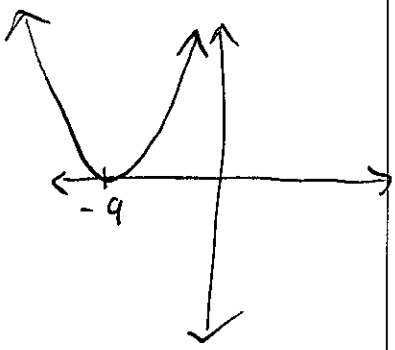
$(x-9)(x-9) = 0$

$x^2 - 9x - 9x + 81 = 0$

$x^2 - 18x + 81 = 0$

$x-9$	
x^2	$-9x$
$-9x$	$+81$

x | -9



4. The two roots of an equation are (0,0) & (3,0). Write the quadratic equation.

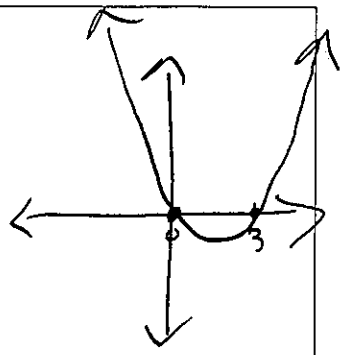
$(x+0)(x-3)=0$

$x^2-3x+0-0=0$

$x^2-3x=0$

$x+0$	
x^2	0
$-3x$	0

$x=3$



Steps for Writing a Quadratic Equation given the Roots:

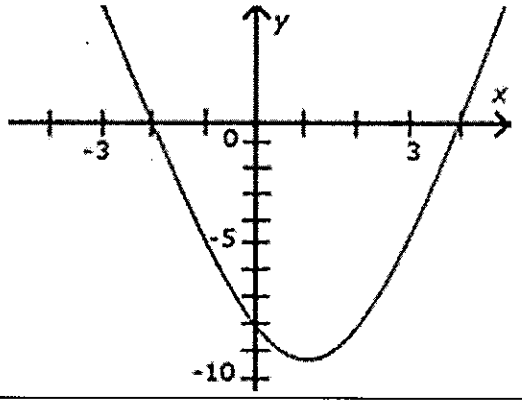
1) work backwards from roots
2) reverse t-bar
3) double distribute / tabular
4) write equation ax^2+bx+c form

5. Write the quadratic equation given the parabola below:

$(x+2)(x-4)=0$ $\quad x=-2,\ x=4$

$x^2-4x+2x-8=0$

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



6. Write the quadratic equation that is represented by the parabola below.

roots $x=-4$ $x=2$

$(x+4)(x-2)=0$

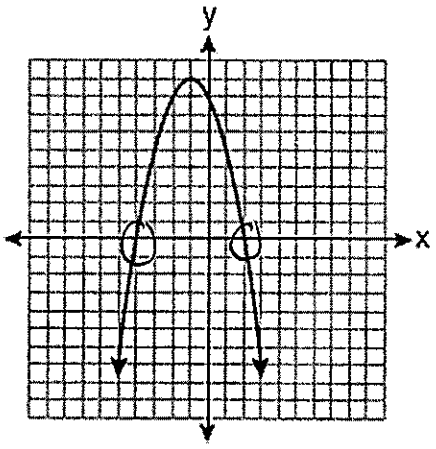
$x^2+4x-2x-8=0$

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

* Parabola is concave down (reflected over x axis, so must negate)

$-(x^2+2x-8)=0$

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



7. If the equation $x^2 - kx - 36 = 0$ has $x = 12$ as one root, what is the value of k?

$x^2 - Kx - 36 = 0$

$12^2 - 12K - 36 = 0$

$144 - 12K - 36 = 0$

$108 - 12K = 0$

$-108 \quad -108$

$\frac{-12K}{-12} = \frac{-108}{-12}$

$K = 9$

$x^2 - 9x - 36 = 0$

$(x-12)(x+4) = 0$

$x = 12 \quad | \quad x = -4$

$x = -4$

8. If the root is -3, using the equation $x^2 + x - k = 0$ what is the value of k?

$x^2 + x - K = 0$

$(-3)^2 - 3 - K = 0$

$9 - 3 - K = 0$

$6 - K = 0$

$-6 \quad -6$

$\frac{-K}{-1} = \frac{-6}{-1}$

$K = 6$

b. Using the value of k, determine the other root.

$x^2 + x - 6 = 0$

$(x+3)(x-2) = 0$

$x = -3 \quad | \quad x = 2$

$x = 2$

9. If 2 and 3 are roots of the equation $x^2 + kx + 6 = 0$, what is the value of k?

$x^2 + Kx + 6 = 0$

$2^2 + 2K + 6 = 0$

$4 + 2K + 6 = 0$

$10 + 2K = 0$

$-10 \quad -10$

$\frac{2K}{2} = \frac{-10}{2}$

$K = -5$