SECTION 1.4
DERIVING QUADRATIC EQUATIONS

i) Find the Q. E. when given two points or roots, one root is double/triple 2nd root

ii) Intersection b/n two parabolas

iii) Perfect Trinomials

iv) For what values of "k" will there be 2roots, 1 root, or no roots

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I) DERIVING A QUADRATIC FUNCTION

- When given the roots we can find the equation of the quadratic function by

- Ie: If the roots of a quadratic function are –3 and –2/3, the equation in factored form will be:

- To find the constant "a"

Ex: Find the equation of a parabola with a vertex at (-2,3) and y-intercept at 6.

Practice: Find the equation of a parabola with a vertex at (5,2) and passing point (3,4).

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Ex: Write the equation of a parabola with a maximum value of 5 at x= −4 and is congruent to

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III) FINDING MISSING CONSTANTS WHEN ONE ROOT IS DOUBLE/TRIPLE THE OTHER

Preview: Find the value of "k"
$$3x^2 + kx + 12 = 3x^2 + 9Ax + 2A$$

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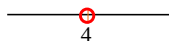
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EX: GIVEN THE EQUATION: $y = 3x^2 + kx + 12$
WHERE ONE ROOTS IS DOUBLE THE OTHER, FIND "K"

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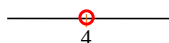
EX: GIVEN THE EQUATION: $y = 16x^2 + kx + 27$
WHERE ONE ROOTS IS TRIPLE THE OTHER, FIND "K"

II) REVIEW INEQUALITIES:

$x > 4$

$x < 4$

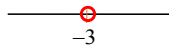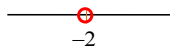Whenever you divide or multiply by a negative number,

$-3x > 6$ $-3x + 4 < 13$

SOLVING INEQUALITIES WITH SQUARES:

o When you have inequalities with squares,

o Draw a number line, draw the

o You will get

o Pick a value from

o Domains that satisfy the equality will be

EXAMPLE: SOLVE THE FOLLOWING INEQUALITIES:

$$x^2 > 9 \qquad\qquad x^2 < 9$$

$$-3 \qquad 3 \qquad\qquad -3 \qquad 3$$

PRACTICE: SOLVE THE FOLLOWING INEQUALITIES:

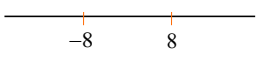$$x^2 > 25 \qquad\qquad x^2 - 26 < 10$$

$$-5 \qquad 5 \qquad\qquad -6 \qquad 6$$

III) NATURE OF ROOTS (SOLVING FOR "K")

Ex: For what values of "k" does the equation have two different real roots?

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

$$-8 \qquad 8$$

Practice: For what values of "k" does the equation have   a) Two equal roots   b)No real roots

$$9x^2 - 2kx + 4 = 0$$

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