

Completing The Square

Date: _____

1. Convert each of the following into *vertex form* by **completing the square**.

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

b) $y = x^2 - 10x$

c) $y = x^2 + 18x$

This technique can be used for all questions. It will be very useful when fractions become involved.

2. Write each of the following quadratic relations in *vertex form* by *completing the square*.

a) $y = x^2 + 8x - 3$

b) $y = x^2 - 12x - 5$

c) $y = x^2 + 10x + 1$

3. When the coefficient of x is not an even number, the same technique is applied.

a) $y = x^2 + 5x + 2$

$y = x^2 + 7x + 1$

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4. When the coefficient is not “1”, you MUST common **factor that coefficient, even if it doesn't appear to be common.**

a) $y = -x^2 - 4x + 5$

b) $y = 3x^2 + 12x - 5$

c) $y = 2x^2 + 5x - 1$

5. Without graphing each function, state whether it has a maximum or a minimum value. State the maximum or minimum value of the function. State the value of x when it occurs.

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

b) $y = 3x^2 + 6x - 8$

c) $y = 2x^2 - 4x + 5$

d) $y = -2x^2 - 12x$

e) $y = 4 - 6x - x^2$

f) $y = 2x^2 + 3x + 3$

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

h) $y = 4x^2 - 16x$

i) $y = -28 + 10x - x^2$

j) $y = x^2 - 12x + 36$