Completing the Square Work

NAME _____

Use materials, or not. But remember to at least THINK of what is happening and why this works. ORGANIZE NEATLY and SHOW ALL WORK ON SEPARATE PAPER.

PART A

Complete the square

1) $x^2 + 10x + 7$ _____

2) $x^2 + 8x + 17$ _____

3) $x^2 + 2x - 8$ _____

4) $x^2 + 6x + 19$ _____

5) $x^2 - 8x - 5$ _____

6) $x^2 - 16x + 10$ _____

7) $x^2 - 4x + 9$ _____

8) $x^2 + 2x + 2$ _____

9) $x^2 + 20x + 40$ _____

10) $x^2 - 14x - 14$ _____

Solve for x: $(x-h)^2 - k = 0$ _____

Solve the equations by first completing the square:

1) $x^2 + 10x + 8 = 0$ _____

2) $x^2 + 8x - 5 = 0$ _____

3) $x^2 + 2x + 13 = 0$ _____

4) $x^2 + 20x = -10$ _____

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PART B

Complete the square.

1) $x^2 + 5x - 6$ _____

2) $x^2 - 3x + 9$ _____

3) $x^2 + x - 1$ _____

4) $x^2 + 9x - 10$ _____

5) $x^2 - 7x + 90$ _____

6) $x^2 - 11x + 2$ _____

7) $x^2 + \frac{1}{4}x - \frac{1}{9}$ _____

8) $x^2 + 3x$ _____

9) $x^2 - 11x - \frac{1}{3}$ _____

10) $x^2 + bx + c$ _____

Solve the equations by first completing the square:

1) $x^2 + 9x + 8 = 0$ _____

2) $x^2 + 3x - 5 = 0$ _____

3) $x^2 + x + 13 = 0$ _____

4) $x^2 = -10x - 4$ _____

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PART C

Complete the Square

1) $2x^2 + 4x + 10$ _____

2) $3x^2 + 9x + 1$ _____

3) $2x^2 - 10x - 1$ _____

4) $5x^2 + 2x - 1$ _____

5) $2x^2 + 3x + 19$ _____

6) $3x^2 + \frac{1}{4}x - \frac{1}{2}$ _____

7) $\frac{2}{5}x^2 - \frac{3}{4}x + 1$ _____

8) $6x^2 + 5x - 1$ _____

9) $6x^2 + 10x - 3$ _____

10) $ax^2 + bx + c$ _____

Use the result from #10 to "instantly" solve the following equations.

1) $2x^2 + 4x - 5 = 0$ _____

2) $3x^2 + 9x + 1 = 0$ _____

3) $2x^2 - 10x - 1 = 0$ _____

4) $5x^2 = -2x + 1$ _____

5) $2x^2 + 3x = -19$ _____

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PART D

Write a quadratic equation in the form $ax^2 + bx + c = 0$ where there are two real solutions.

Write a quadratic equation in the form $ax^2 + bx + c = 0$ where there are no real solutions.

Write a quadratic equation in the form $ax^2 + bx + c = 0$ where there is exactly one real solution.

Continue to experiment as above. What determines how many solutions a quadratic equation will have? Under what conditions will it have 0, 1, or 2 real solutions?