Algebra 2 Ch. 4.5 Notes/HW   Name:_____

Completing the Square (4.5)

Day 1 Practice. If necessary use fractions and not decimals. $c = \left(\frac{b}{2}\right)^2$

Complete the square and write it in factored form (as a squared binomial)

1. $x^2 - 22x +$_____$= ($ $)^2$

2. $x^2 + 12x +$_____$= ($ $)^2$

3. $x^2 + x +$_____$= ($ $)^2$

4. $x^2 + 10x +$_____$=$

5. $x^2 - 6x +$_____$=$

6. $x^2 + 3x +$_____$=$

7. $x^2 - \frac{1}{2}x +$_____$=$

8. $x^2 - \frac{5}{7}x +$_____$=$

9. $x^2 - 13x +$_____$=$

10. $x^2 - 3x +$_____$=$

11. $x^2 - 34x +$_____$=$

12. $x^2 - 7x +$_____$=$

Solve each equation by taking the <u>square root</u> of both sides. Don't forget when you take the square root you need to note the two answers with $\pm$.

13. $(x + 7)^2 = 64$

14. $(x - 2)^2 = 15$

15. $(x + 12)^2 = 16$

16. $(x - 8)^2 = 12$

Day 2 Notes: Solve by Completing the Square.

• Get all the variable terms on one side, constants on the other • Divide all terms by a to make $a = +1$ • Make a perfect square. Divide b by 2 then square • Add the result to both sides • Factor (the perfect square) • Square root both sides • Simplify and solve	1. $x^2 + 6x = 0$
• Get all the variables on one side, constants on the other • Divide all terms by a to make $a = +1$ • Make a perfect square. Divide b by 2 then square • Add the result to both sides • Factor (the perfect square) • Square root both sides • Simplify and solve	2. $x^2 + 4x = 6$

Day 2 Notes: Solve by Completing the Square.

- Get all the variables on one side, constants on the other - Divide all terms by a to make $a = +1$ - Make a perfect square. Divide b by 2 then square - Add the result to both sides - Factor (the perfect square) - Square root both sides - Simplify and solve	3. $2x^2 + 8x - 18 = 0$
- Get all the variables on one side, constants on the other - Divide all terms by a to make $a = +1$ - Make a perfect square. Divide b by 2 then square - Add the result to both sides - Factor (the perfect square) - Square root both sides - Simplify and solve	4. $2x^2 + 7x - 4 = 0$

Day 2 Practice: Solve by Completing the Square.

1. $x^2 + 4x = 0$

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

3. $x^2 - 6x = 23$

4. $x^2 - 8x + 16 = 8$

5. $x^2 + 4x + 11 = 0$

6. $2x + 4 = x^2$

7. $x^2 + 8x + 16 = 1$

8. $x^2 + 18 = 9x$

9. $x^2 - 14x + 19 = 0$

10. $x^2 - 13x + 36 = 0$

11. $3x^2 + 2x - 1 = 0$

12. $4x^2 = -12x + 4$

Investments: The amount of money A in an account in which P dollars are invested for 2 years is given by the formula $A = P(1 + r)^2$ where r is the interest rate compounded annually. If the original investment is \$800 and the amount A in the account after two years is \$882, at what interest rate was it invested?

Hint: Substitute in your values for A and P, then use the square root method to find r. Since r is an interest rate you only care about the positive results and will need to convert your answer into a percent.