Algebra 2 Ch. 4.5 Retake Problems Name: Answers ODDS

Completing the Square (4.5)

Practice. If necessary use fractions and **NO DECIMALS!!** $c = \left(\frac{b}{2}\right)^2$

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

1. $x^2 - 22x +$ 121 $= (x-11)^2$

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

3. $x^2 + x +$ $\frac{1}{4}$ $= (x+\frac{1}{2})^2$

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

5. $x^2 - 6x +$ 9 $= (x-3)^2$

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

7. $x^2 - \frac{1}{2}x +$ $\frac{1}{16}$ $= (x-\frac{1}{4})^2$

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

9. $x^2 - 13x +$ $\frac{169}{4}$ $= (x-\frac{13}{2})^2$

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

11. $x^2 - 34x +$ 289 $= (x-17)^2$

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

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

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

$x = -15 \quad x = 1$

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

$x = 2+\sqrt{15} \quad x = 2-\sqrt{15}$

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

$x = -16 \quad x = -8$

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

$x = 8+2\sqrt{3}$
$x = 8-2\sqrt{3}$

Solve by Completing the Square.

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

$X=0$
$X=4$

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

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

$X=3+4\sqrt{2}$
$X=3-4\sqrt{2}$

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

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

$X=-2+i\sqrt{7}$
$X=-2-i\sqrt{7}$

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

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

$X=-5$
$X=-3$

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

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

$X=6$
$X=3$

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

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

$X=\frac{1}{3}$
$X=-1$

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.

$P=800 \quad A=882 \quad 882=800(1+r)^2 \quad \sqrt{\frac{882}{800}}=\sqrt{(1+r)^2}$

Answer 5%