Notes 1.5 Solving Equations

Notes:

*Leading coefficient must be one

*Isolate the x terms, cancel to get constant to other side

*Divide middle coefficient by 2, then square it.

Completing the Square

$1x^2 - 8x + 13 = 0$

$-13 \quad -13$

$x^2 - 8x + \underline{16} = -13 + \underline{16}$

$(x - 4)^2 = \pm\sqrt{3}$

$x - 4 = \pm\sqrt{3}$

$x = 4 \pm \sqrt{3}$

$\frac{-8}{2} = -4$

$(-4)^2 = 16$

Notes 1.5 Solving Equations

Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Zero Product Property

$(x + \quad)(x + \quad) = 0$

$x =$ $\qquad$ $x =$

Today's assignment:

3. $x^2 - 4x - 5 = 0$ → solve 3 different ways

+5 +5

a. factor

$(x+1)(x-5)=0$

$x+1=0$ $\quad x-5=0$

$x=-1$ $\quad x=5$

b. complete the square

$x^2-4x+4=5+4$

$(x-2)^2=9$

$\pm\sqrt{(x-2)^2}=\pm\sqrt{9}$

$x-2=\pm 3$

+2 +2

$x=2\pm 3$

$x=5 \quad x=-1$

c. quadratic formula

See next slide

$\frac{-4}{2}=-2 \rightarrow (-2)^2$

$=4$

3. $1x^2 - 4x - 5 = 0$ (a = 1, b = −4, c = −5) → solve 3 different ways

a. factor

b. complete the square

c. quadratic formula

c) $x = \dfrac{-(-4) \pm \sqrt{(-4)^2 - 4(1)(-5)}}{2(1)}$

$x = \dfrac{4 \pm \sqrt{16+20}}{2} = \dfrac{4 \pm \sqrt{36}}{2} = \dfrac{4 \pm 6}{2}$

$\dfrac{10}{2} = 5$

$\dfrac{-2}{2} = -1$

19. $\frac{x}{3} - 2 = \frac{5}{3}x + 7$

$x - 6 = 5x + 21$

$-x \quad -21 \qquad -x \quad -21$

$\frac{-27}{4} = \frac{4x}{4}$

$x = \frac{-27}{4}$

leave in this form!

1.5 check evens answers:

24. $x = \frac{1}{17}$

26. $x = \frac{13}{6}$

72. $3 \pm 2\sqrt{2}$