4.5 Choosing a Method

One of the most difficult parts of math can be knowing which method to use to solve an equation. You have to familiar enough with the process and the conditions of each process in order to determine the best method to use for each question. Today we are going to clarify what kinds of problems are best to solve with each method we have gone over in this unit.

1) For each question below, state what method you would use to solve and why. Then solve.

a. $x^2 - 10x + 6 = 0$

Method: Complete the square

Why: Doesn't factor, $a=1$ & b is even

$\frac{-10}{2} = -5$ $(-5)^2 = 25$

$x^2 - 10x + 6 = -6 + 6$

$x^2 - 10x + 25 = -6 + 25$

$\sqrt{(x-5)^2} = \sqrt{19}$

$x - 5 = \pm\sqrt{19}$

$+5 \quad +5$

$\boxed{x = 5 \pm \sqrt{19}}$

b. $2x^2 - 18x + 28 = 0$

Method: Factoring

Why: It factors

$2(x^2 - 9x + 14) = 0$

$2(x-2)(x-7) = 0$

$14x^2$

$-2x \quad -7x$

$\boxed{x = 2, 7}$

c. $x^2 - 5x + 12 = 0$

Method: Quadratic formula

Why: Doesn't factor, b is not even

$a=1 \quad b=-5 \quad c=12$

$x = \frac{5 \pm \sqrt{(-5)^2 - 4(1)(12)}}{2(1)}$

$= \frac{5 \pm \sqrt{-23}}{2} = \boxed{\frac{5 \pm i\sqrt{23}}{2}}$

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

d. $3(x+4)^2 - 18 = 0$

$+18 \quad +18$

$\frac{3(x+4)^2}{3} = \frac{18}{3}$

$\sqrt{(x+4)^2} = \sqrt{6}$

$x+4 = \pm\sqrt{6}$

$-4 \quad -4$

$\boxed{x = -4 \pm \sqrt{6}}$

Method: Take the $\sqrt{}$

Why: The equation is $(x\ )^2$

2) Solve each equation below. Use whichever method best fits the situation.

a.	