Adv Alg

th 9/7/17
Pd. 7

How do I solve?

the objective of solving is to isolate the variable.

first: Simplify, ~~if necessary~~
- combine like terms
- PEMDAS to guide order

simplifying →

P	E	M	D	A	S
( )	x^2	•	÷	+	−

← solving

Second: if necessary - move the variable of interest to one side of the equal sign

Third: undo operations on the variable by doing the inverse operations AND PEMDAS in reverse to guide order

operations	inverse operations
•	÷
x^2	$\sqrt{\ }$
+	−

POSSIBLE OUTCOMES

Soln = Solution

One soln, multiple solns, no soln, all solns

NO SOLN: occurs when the final statement IS FALSE!

eg Solve $x - 1 = -3 + x$

$+3 \quad +3$

$\frac{x}{x} + 2 = \frac{x}{x}$

$2 = 0$ FALSE $\Rightarrow$ no soln

ALL SOLNS: occurs when the final statement is always TRUE!

eg solve $2 + 2x = 2(x+1)$

$2 + 2x = 2x + 2$

$-2 \quad -2$

$2x = 2x$

$-2x \quad -2x$

$0 = 0$ TRUE $\Rightarrow$ infinite soln, all soln

Solving w/ Fractions

one fraction = one fraction $\Rightarrow$ Cross multiply

Gen. Rule

$\frac{a}{b} = \frac{c}{d}$

$ad = bc$

eg solve $\frac{3}{x} = \frac{9}{10}$ assume $x \neq 0$

$\frac{9x}{9} = \frac{30}{9}$

GCF = greatest common factor

$x = \frac{30 \div 3}{9 \div 3} = \frac{10}{3}$

Manipulation Examples

Given $C = 2\pi r$, solve for "r"

$$\frac{C}{2\pi} = \frac{2\pi r}{2\pi}$$

$$r = \frac{C}{2\pi}$$

Given $y = mx + b$, solve "m"

$$y = mx + b$$
$$-b \quad -b$$

$$\frac{y - b}{x} = \frac{mx}{x} \quad \text{assume } x \neq 0$$

$$m = \frac{y - b}{x}$$