1.3 Algebraic equations

Equation in 1 variable

$3x + 4 = 16$

solution set = ANY answer(s) that make(s) an equation true.

use algebra:

ⓐ #'s on one side, variables on the other

ⓑ Variable needs a positive 1 as the coefficient

v + # = #

$3x + 4 = 16$

$-4 \quad -4$

v = #

$\frac{3x}{3} = \frac{12}{3}$

$x = 4$

$3(4) + 4 = 16$

✓ ✓

✓ it

$\# - v = \# - v$

$15 - 9 = 23 - 29$

$-23 \qquad -23$

$\# - v = v$

$-8 - 9 = -29$

$+9 \qquad +9$

$\# = v$

$-8 = -9$

$+1 \qquad +1$

$9 = 8$

✓ , ✗

$2(x-3)-17=13-3(x+2)$ solve

$v-\#-\#$ $=$ $\#-v-\#$

$2x-6-17=13-3x-6$

$v-\#$ $=$ $\#-v$

$2x-23=7-3x$

$+3x\ +23 \quad +23\ +3x$

$\frac{5x}{5}=\frac{30}{5}$ $x=6$

Check your work

$x=6$

Let's do Examples and Practice for 1-4 on p. 49-51

$$3x+5=3(x+2)$$

$5 = 6$ makes no sense

solution is $\{\}$ or $\emptyset$

means there is no solution

called a contradiction

$\{0\}$ = solution is zero

This is not no solution

solve: $6x - 4 = 2 + 6(x-1)$

Always true. Called an identity

solution is all real numbers

$\{x \mid x \text{ is a real } \#\}$