

Equations – Linear Types

“ $x^1 = x$ ” is the unknown

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Linear in “ x ” (unknown, variable) ; only one letter but can be different than “ x ”

- a. “ x ” is the variable, unknown, ...
- b. Linear implies power one (1): $x = x^{\text{Power}} = x^1$
- c. Goal: Solve for x (Isolate “ x ”): $x = \frac{x}{1} = \# \text{ or } \# 's$ when appropriate
[No “ x ” on the RHS – Right Hand Side]

Types of Linear Equations:

1. Conditional (1 solution only)

$$3x - 5 = x + 4$$

$$2x = 9$$

$$x = \frac{9}{2}$$

$$\text{—————} \bigg| \text{—————} \frac{9}{2} \bigg| \text{—————}$$

2. Identity (Infinite solutions)

$$3x - 6 = 3(x - 2)$$

$$3x - 6 = 3x - 6$$

$$0 = 0$$

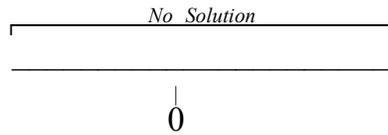
$$\text{//////////0//////////}$$

3. Contradiction (No solutions)

$$3x - 6 = 3(x + 2)$$

$$3x - 6 = 3x + 6$$

$$0 = 12 \Rightarrow \text{Contradiction (TRASH!)}$$



Note: **Always** draw the graph of the solution when possible!