

# CORE CONCEPT:

$$\text{IF } |ax+b| = |cx+d|$$

THAT MEANS

$$ax+b = cx+d \quad \text{OR} \quad ax+b = -(cx+d)$$

EX #4: a)  $|3x-4| = |x|$

$$3x-4 = x \quad \text{OR} \quad 3x-4 = -x$$

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

$$\boxed{2 = x}$$

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

$$\boxed{1 = x}$$

cx

$$|3(2)-4| \stackrel{?}{=} |2|$$

$$|2| \stackrel{?}{=} |2|$$

$$2 = 2 \checkmark$$

$$|3(1)-4| \stackrel{?}{=} |1|$$

$$|-1| \stackrel{?}{=} |1|$$

$$1 = 1 \checkmark$$

b)  $|4x-10| = 2|3x+1|$

$$4x-10 = 2(3x+1) \quad \text{OR} \quad 4x-10 = 2[-(3x+1)]$$

$$4x-10 = 6x+2$$

$$-10 = 2x+2$$

$$\frac{-12 = 2x}{2}$$

$$\boxed{-6 = x}$$

$$4x-10 = 2[-3x-1]$$

$$4x-10 = -6x-2$$

$$10x-10 = -2$$

$$10x = 8$$

$$\boxed{x = \frac{8}{10} = \frac{4}{5} = 0.8}$$

cx

$$|4(-6)-10| \stackrel{?}{=} 2|3(-6)+1|$$

$$|-34| \stackrel{?}{=} 2|-17|$$

$$34 \stackrel{?}{=} 2(17)$$

$$34 \stackrel{?}{=} 34 \checkmark$$

$$|4(0.8)-10| \stackrel{?}{=} 2|3(0.8)+1|$$

$$|-6.8| \stackrel{?}{=} 2|3.4|$$

$$6.8 \stackrel{?}{=} 2(3.4)$$

$$6.8 = 6.8 \checkmark$$

$$\text{Ex \# 5: } |2x + 12| = 4x$$

$$2x + 12 = 4x \quad \text{OR}$$

$$2x + 12 = -4x$$

$$\underline{2 = 2x}$$

$$\underline{12 = -6x}$$

$$\boxed{6 = x}$$

$$\cancel{-2 = x}$$

$$\text{ex. } |2(6) + 12| \stackrel{?}{=} 4(6)$$

$$|2(-2) + 12| \stackrel{?}{=} 4(-2)$$

$$|24| \stackrel{?}{=} 24$$

$$|8| \stackrel{?}{=} -8$$

$$24 \checkmark 24$$

$$\cancel{8 = -8}$$

$$\text{Ex \# 6: } |x + 5| = |x + 11|$$

$$x + 5 = x + 11 \quad \text{OR}$$

$$x + 5 = -(x + 11)$$

$$5 = 11 \quad \text{X}$$

IMPOSSIBLE!!

$$x + 5 = -x - 11$$

$$2x + 5 = -11$$

$$\underline{2x = -16}$$

$$\boxed{x = -8}$$

$$\text{ex. } |-8 + 5| = |-8 + 11|$$

$$|-3| = |3|$$

$$3 = 3 \checkmark$$