

abs. value solving

*abs value always \oplus

ex1 $|x+5| = 10$

$$x+5=10$$
$$x=5$$

$$x+5=-10$$
$$x=-15$$

ex2 $|3x-5| = 12$

$$3x-5=12$$
$$3x=17$$
$$x=17/3$$

$$3x-5=-12$$
$$3x=-7$$
$$x=-7/3$$

ex3 $|2x+3| = x-7$

$$2x+3=x-7$$
$$x=-10$$

$$2x+3=-(x-7)$$
$$2x+3=-x+7$$
$$3x=4$$
$$x=4/3$$

c: $|-20+3| = -10-7$
$$|-17| = -17$$
$$17 = -17x$$

c: $|\frac{8}{3} + \frac{9}{3}| = \frac{4}{3} - \frac{21}{3}$
$$\frac{17}{3} = -\frac{17}{3}$$

no solution!

ex4 $|x^2-3x| = -4x+6$

$$x^2-3x = -4x+6$$

$$x^2+x-6=0$$

$$(x+3)(x-2)=0$$

$$x=-3, x=2$$

$$x^2-3x = -(4x+6)$$

$$x^2-3x = 4x+6$$

$$x^2-7x+6=0$$

$$(x-6)(x-1)=0$$

$$x=6, x=1$$

c: $|9+9| = 4(2+6)$
$$18 = 18 \checkmark$$

c: $|4-6| = -8+2$
$$2 = -6x$$

c: $|36-18| = -24+6$
$$18 = -18x$$

radicals

ex5 $\sqrt{2x+7} - x = 2$

$$(\sqrt{2x+7})^2 = (2+x)^2$$

$$2x+7 = x^2+4x+4$$

$$0 = x^2+2x-3$$

$$0 = (x+3)(x-1)$$

$$x=-3, x=1$$

c: $\sqrt{-6+7} + 3 = 2$
$$\sqrt{1} + 3 = 2x$$

c: $\sqrt{2+7} - 1 = 2$
$$\sqrt{9} - 1 = 2 \checkmark$$
$$x=1$$

ex6 $6\sqrt{x-1} = 7$

$$(\sqrt{x-1})^2 = \frac{7}{6}^2$$

$$x-1 = \frac{49}{36}$$

$$x = \frac{49}{36} + 1$$

$$x = \frac{49}{36} + \frac{36}{36}$$

$$x = \frac{85}{36}$$

c: $6\sqrt{\frac{85}{36} - \frac{36}{36}} = 7$

$$6\sqrt{\frac{49}{36}} = 7$$

$$6(\frac{7}{6}) = 7 \checkmark$$

c: $|1-3| = -4+6$
$$2 = 2 \checkmark$$

$$x = -3 \text{ ; } |$$