① $-2(-6x+5)-2=-84$

$12x-10-2=-84$

$12x-12=-84$

$+12 \quad +12$

$\frac{12x}{12}=\frac{-72}{12}$

$x=-6$

② $5(-5x+2)=3(x-4)-6$

$-25x+10=3x-12-6$

$-25x+10=3x-18$

$-3x \quad -3x$

$-28x+10=-18$

$-10 \quad -10$

$\frac{-28x}{-28}=\frac{-28}{-28}$

$x=1$

3

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

$$-6x - 12 = -6x - 24$$

$+6x \qquad +6x$

$$-12 = -24$$

no variable and untrue statement

NO SOLUTION

4

$$-3 - (1 - 2n) = 2(n - 2)$$

$$-3 - 1 + 2n = 2n - 4$$

$$-4 + 2n = 2n - 4$$

$-2n \quad -2n$

$$-4 = -4$$

no variable and True statement

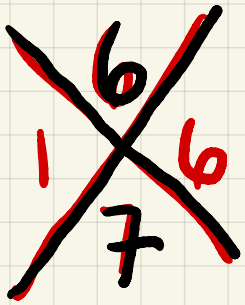
ALL REAL #'s

⑤ $2K^2+7K+3=0$ (solve by Factoring)

$K^2+7K+6=0$

$(K+1)(K+6)=0$

$\frac{1}{2}$ $\frac{6}{2}$



$(2K+1)(K+3)=0$

$2K+1=0$ $K+3=0$

$K=-\frac{1}{2}$ $K=-3$

⑥ $3r^2-4r=0$

$r(3r-4)=0$

$r=0$ $3r-4=0$

$r=0$ $r=4/3$

(7) $2x^2 - 3x = 6$ (solve using quad form)

$-6 \quad -6$

$2x^2 - 3x - 6 = 0$

$Ax^2 + Bx + C = 0$

$A = 2 \quad B = -3 \quad C = -6$

$$x = \frac{-B \pm \sqrt{B^2 - 4AC}}{2A}$$

$$x = \frac{-(-3) \pm \sqrt{(-3)^2 - 4(2)(-6)}}{2(2)}$$

$$\boxed{x = \frac{3 \pm \sqrt{57}}{4}}$$

(8) $14 = \sqrt{x-7} + 6$

$-6 \qquad -6$

$(8)^2 = (\sqrt{x-7})^2$

$64 = x - 7$

$+7 \quad +7$

$\boxed{x = 71}$

(9) $10 = 6 + \sqrt{16x}$

$-6 \quad -6$

$(4)^2 = (\sqrt{16x})^2$

$\frac{16}{16} = \frac{16x}{16}$

$\boxed{x = 1}$

(10) $\sqrt{n+1} + 2 = -4$

$-2 \quad -2$

$\sqrt{n+1} = -6$

*** can stop here because the $\sqrt{}$ of anything cannot be negative ***

NO SOLUTION

(11) $|-2x| + 3 = 11$

$-3 \quad -3$

$|-2x| = 8$

$+ \quad -$

$-2x = 8 \qquad -2x = -8$

$x = -4 \qquad x = 4$

12

~~(10)~~ $\frac{|7+x|}{\cancel{10}} = 1(10)$

$|7+x| = 10$

$+$ $-$

$7+x=10$ $\quad$ $7+x=-10$

$x=3$ $\quad$ $x=-17$

13

$-\cancel{8}+|9x| = -10$

$+8$ $\quad$ $+8$

$|9x| = -2$

*** can stop here because the | | of anything cannot be negative ***

NO SOLUTION

14 $-2(1+6x) \leq -74$

$-2 - 12x \leq -74$

$+2 \qquad +2$

$-12x \leq -72$

$\frac{-12x}{-12} \leq \frac{-72}{-12}$

Flip sign!

$x \geq 6$

15 $-5(-3+4x) > -65$

$15 - 20x > -65$

$-15 \qquad -15$

$-20x > -80$

$\frac{-20x}{-20} > \frac{-80}{-20}$

Flip sign!

$x < 4$

16

$3^{-2x-1} = 9$

$3^{-2x-1} = 3^2$

$-2x-1=2$

$-2x=3$

$x=-3/2$

17

$64^{-x} = 4^2$

$(4^3)^{-x} = 4^2$

$4^{-3x} = 4^2$

$-3x=2$

$x=-2/3$

18

$4^{3x} = \frac{1}{16}$

$4^{3x} = 4^{-2}$

$3x=-2$

$x=-2/3$

19 $y = -3x - 16$

$4x + 3y = -18$

$4x + 3(-3x - 16) = -18$

$4x - 9x - 48 = -18$

$-5x - 48 = -18$

$+48 \quad +48$

$-5x = 30$

$-5 \quad -5$

$x = -6$

20

$y = -4x - 4$

$-8x - 2y = 6$

$-8x - 2(-4x - 4) = 6$

$-8x + 8x + 8 = 6$

$8 = 6$

no variable and untrue statement

NO SOLUTION

21

$y = 4x + 17$

$-12x + 3y = 51$

$-12x + 3(4x + 17) = 51$

$-12x + 12x + 51 = 51$

$51 = 51$

no variable and True statement

ALL REAL #'s