TH-PC Pre-Calculus 9/16

1.) $7x + 4 = 21 + 24x$
$-7x \qquad -7x$

$7x + 4 = y$

$21 + 24x = y$

$4 = 21 + 17x$
$-21 \quad -21$

$\frac{-17}{17} = \frac{17x}{17}$

$\boxed{x = -1}$

2) $-3(4t - 5) = 5(6 - 2t)$

$-12t + 15 = 30 - 10t$
$+12t \qquad +12t$

$15 = 30 + 2t$
$-30 \quad -30$

$\frac{-15}{2} = \frac{2t}{2}$

$\boxed{t = -\frac{15}{2}}$

3.) $5 - (2x - 3) = 7 - (3x + 5)$

$5 - 2x + 3 = 7 - 3x - 5$

$-2x + 8 = -3x + 2$
$+3x \qquad +3x$

$x + 8 = 2$
$-8 \quad -8$

$\boxed{x = -6}$

4) $46 - [7 - 8y + 9(6y - 2)] = -7(4y - 7) - 2[6(2y - 3) - 4 + 6y]$

4) $46-[7-8y+9(6y-2)]=-7(4y-7)-2[6(2y-3)-4+6y]$

$46-[7-8y+54y-18]=-28y+49-2[12y-18-4+6y]$

$46-[46y-11]=-28y+49-2[18y-22]$

$46-46y+11=-28y+49-36y+44$

Regret!

$-46y+57=93-64y$

$+64y \qquad +64y$

$18y+57=93$

$-57 \quad -57$

$\frac{18y}{18}=\frac{36}{18}$

$\boxed{y=2}$

$24\left(\frac{1}{12}z\right)=24\left(\frac{1}{24}z+3\right)$

$12\left\{12\left(2m-\frac{5m}{8}\right)=12\left(\frac{3m}{72}+\frac{4}{3}\right)\right.$

$144m-\frac{\overset{9}{\cancel{(72)}}5m}{\cancel{8}}=\frac{\cancel{(72)}3m}{\cancel{72}}+\frac{\overset{24}{72(4)}}{\cancel{3}}$

$\frac{24}{12}z=\frac{24}{24}z+72$

$144m-(9)5m=3m+24(4)$

$2z=z+72$

$-z \quad -z$

$\boxed{z=72}$

$144m-45m=3m+96$

$99m=3m+96$

$-3m \quad -3m$

$\frac{96m}{96}=\frac{96}{96}$

$\boxed{m=1}$

$$\frac{x-3}{3} - \frac{x-4}{2} = 1 - \frac{x-6}{6}$$

$$\boxed{\frac{2x-6}{6} - \frac{3x-12}{6} = \frac{6}{6} - \frac{(x-6)}{6}}$$

$$2x-6-(3x-12) = 6-(x-6)$$

$$2x-6-3x+12 = 6-x+6$$

$$-x+6 = -x+12$$
$$+x \qquad +x$$

$$6 = 12$$

$\boxed{\text{no solution}}$

Example 1

$$\frac{x-3}{3} \frac{*2}{*2} = \frac{2(x-3)}{6} = \frac{2x-6}{6}$$

$$\frac{x-4}{2} \frac{*3}{*3} = \frac{3(x-4)}{6} = \frac{3x-12}{6}$$

$$\frac{1}{1} \frac{*6}{*6} = \frac{6}{6}$$

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

$x^2 \boxed{-5}x \boxed{+6} = 0$

$+ \rightarrow$ same sign

$- \rightarrow$ different signs

$2 * 3$ $\qquad$ $1 * 6$

$-2 * -3 = 6$

$2 + 3 = 5$ $\qquad$ $1 + 6 = 7$

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

$-2 * -3 = 6$

Alanna's confusion

$-2 + -3 = -5$

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

$$x-2 = 0 \qquad x-3 = 0$$
$$+2 \quad +2 \qquad +3 \quad +3$$

$\boxed{x = 2, 3}$

$\boxed{3}x^2 + 10x \boxed{-8} = 0$

$\{-4, 2/3\}$

3	8
$\boxed{1 * 3}$	$\{1*8 \quad 2*4\}$

	3x	$\boxed{-1}$
x	$3x^2$	$-x$
$\boxed{8}$	$24x$	-8

$24x - x = 23x \neq 10x$

	3x	$\boxed{-8}$
x	$3x^2$	$-8x$
$\boxed{1}$	$3x$	-8

$3x - 8x$

$-5x$

$10x$

	3x	$\boxed{-4}$
x	$3x^2$	$-4x$
$\boxed{2}$	$6x$	-8

$6x - 4x$

$2x$

	3x	$\boxed{-2}$
x	$3x^2$	$-2x$
$\boxed{4}$	$12x$	-8

$12x - 2x = 10x$

$(x+4)(3x-2) = 0$

$x + 4 = 0$
$\quad -4 \quad -4$
$x = -4$

$3x - 2 = 0$
$\quad +2 \quad +2$
$\frac{3x}{3} = \frac{2}{3}$

$x = \frac{2}{3}$

Square Root Method

$$2p^2 - 50 = 0$$
$$+50 \quad +50$$

$$\frac{2p^2}{2} = \frac{50}{2}$$

$$\sqrt{p^2} = \sqrt{25}$$

$$\boxed{p = \pm 5}$$

quadratic

$$\sqrt{(4x-1)^2} = \sqrt{16}$$

$$(4x-1)(4x-1) = 16$$

$$4x - 1 = \pm 4$$

$$4x - 1 = 4$$
$$+1 \quad +1$$

$$\frac{4x}{4} = \frac{5}{4}$$

$$x = \frac{5}{4}$$

$$4x - 1 = -4$$
$$+1 \quad +1$$

$$\frac{4x}{4} = \frac{-3}{4}$$

$$x = \frac{-3}{4}$$