MTH-PC College Algebra Session 7 9/29

$|3+10v| = 73$ (73, −73)

$3+10v = 73$ $\quad 3+10v = -73$

$-3 \quad -3 \quad -3 \quad -3$

$\frac{10v}{10} = \frac{70}{10} \quad \frac{10v}{10} = \frac{-76}{10}$

$v = 7 \quad v = \frac{-76 \div 2}{10 \div 2} = \frac{-38}{5}$

$|3+10v| = -18$

No solution!

$-2|3+10v| = \frac{10}{-2}$

$|3+10v| = -5$

No solution!

$|8x-2| = |12x+6|$

$8x-2 = 12x+6$

$-8x \quad -8x$

$-2 = 4x+6$

$-6 \quad -6$

$\frac{-8}{4} = \frac{4x}{4}$

$-2 = x$

$12(-2)+6$

$-24+6 = \ominus$

$8x-2 = -(12x+6)$

$8x-2 = -12x-6$

$+2 \quad +2$

$8x = -12x-4$

$+12x \quad +12x$

$\frac{20x}{20} = \frac{-4 \div 4}{20 \div 4}$

$x = \frac{-1}{5}$

$12(-\frac{1}{5})+6$

$-\frac{12}{5}+6$

$-2.4+6 = (+)$

1.) $|9x-9|+7=70$

$-7 \quad -7$

$|9x-9|=63$

$9x-9=63$ or $9x-9=-63$

$+9 \quad +9 \quad +9 \quad +9$

$\frac{9x}{9}=\frac{72}{9}$ $\quad$ $\frac{9x}{9}=\frac{-54}{9}$

$x=8$ $\quad$ $x=-6$

2.) $6|6-10m|+8=6m+80$

$-8 \quad -8$

$\frac{6|6-10m|}{6}=\frac{6m+72}{6}$

$|6-10m|=m+12$

$6-10m=m+12$ or $6-10m=-m-12$

$-m \quad -m \quad +m \quad +m$

$6-11m=12$ $\quad$ $6-9m=-12$

$-6 \quad -6 \quad -6 \quad -6$

$-11m=6$ $\quad$ $-9m=-18$

$\frac{-11m}{-11}=\frac{6}{-11}$ $\quad$ $\frac{-9m}{-9}=\frac{-18}{-9}$

$m=-\frac{6}{11}$ $\quad$ $m=2$

$x^6 - 9x^3 + 8 = 0$

$x^3 = u$

u substitution

$(x^3)^2 - 9x^3 + 8 = 0$

Quadratic!!

$u^2 - 9u + 8 = 0$

$-1 * -8 = 8$

$-1 + -8 = -9$

$(u-1)(u-8) = 0$

$\sqrt[3]{x^3} = \sqrt[3]{1}$ $\quad$ $\sqrt[3]{x^3} = \sqrt[3]{8}$

$x = 1$ $\quad$ $x = 2$

$u - 1 = 0$
$+1 \quad +1$
$u = 1$

$u - 8 = 0$
$+8 \quad +8$
$u = 8$

$x^8 - 17x^4 + 16 = 0$

$u = x^4$

$(x^4)^2 - 17x^4 + 16 = 0$

$-16 * -1 = 16$

$-16 + -1 = -17$

$u^2 - 17u + 16 = 0$

$(u-16)(u-1) = 0$

$u = 16$ $\quad$ $u = 1$

$\sqrt[4]{x^4} = \sqrt[4]{16}$ $\quad$ $\sqrt[4]{x^4} = \sqrt[4]{1}$

$x = \pm 2$ $\quad$ $x = \pm 1$

$u - 16 = 0$
$+16 \quad +16$
$u = 16$

$u - 1 = 0$
$+1 \quad +1$
$u = 1$

$2(1-y)^2 + 5(1-y) - 12 = 0$

$1-y = u$

$2u^2 + 5u - 12 = 0$

$\frac{-5 \pm 11}{4}$

$\frac{-5+11}{4} = \frac{6}{4} = \frac{3}{2}$

$\frac{-5-11}{4} = \frac{-16}{4} = -4$

$u = \frac{3}{2} \quad u = -4$

$u = 1-y$

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

$-\frac{2}{2} \quad -\frac{2}{2}$

$\frac{1}{2} = -y$

$\frac{}{-1} \quad \frac{}{-1}$

$y = -\frac{1}{2}$

$-4 = 1-y$

$-1 \quad -1$

$-5 = -y$

$\frac{}{-1} \quad \frac{}{-1}$

$y = 5$

$\frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$\frac{-5 \pm \sqrt{(5)^2-4(2)(-12)}}{2(2)}$

$\frac{-5 \pm \sqrt{25+96}}{4}$

$\frac{-5 \pm \sqrt{121}}{4}$

$2x^{1/2} + x^{1/4} - 1 = 0$ $\quad u = x^{1/4}$

$\downarrow$

$2(x^{1/4})^2 + x^{1/4} - 1 = 0$

$2u^2 + u - 1 = 0$

$(2u - 1)(u + 1) = 0$

$2u - 1 = 0 \quad u + 1 = 0$

$+1 \; +1 \quad -1 \; -1$

$\frac{2u}{2} = \frac{1}{2} \quad u = -1$

$u = \frac{1}{2}$

$(x^{1/4})^4 = (\frac{1}{2})^4 \quad (x^{1/4})^4 = (-1)^4$

$x = \frac{1}{16} \quad x = 1$

$x^{9/4 - \frac{1}{4}} - 2x^{5/4 - \frac{1}{4}} - 3x^{1/4} = 0$

$x^{1/4} \quad x^{1/4} \quad x^{1/4}$

$x^{1/4}(x^{8/4} - 2x^{4/4} - 3) = 0$

$x^{1/4}(x^2 - 2x - 3) = 0$

$x^{1/4}(x - 3)(x + 1) = 0$

$x^{1/4} = 0$

$x - 3 = 0$

$x + 1 = 0$

$$2p^3 - 3p^2 - 8p + 12 = 0$$

$$p^2(2p-3) - 4(2p-3) = 0$$

$$(p^2-4)(2p-3) = 0$$

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