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#103

#1) $3x^2 - 4x - 7 = 0$

$3x \quad - \quad 7$

$x \quad + \quad 1$

$(3x-7)(x+1)=0$

$3x-7=0 \qquad x+1=0$

$x = \frac{7}{3}, \quad x=-1$

#5) $x^2 - 10x = 1575$

$x^2 - 10x + \_\_\_ = 1575 + \_\_\_$

$x^2 - 10x \underline{+25} = 1575 \underline{+25}$

$(x-5)^2 = 1600$

$x-5 = \pm\sqrt{1600}$

$x-5 = \pm 40$

$x-5=40 \qquad x-5=-40$

$x=45, \quad x=-35$

#9) $x^2 + 6x + 10 = 0$

$x^2 + 6x \pm \_\_\_ = -10 + \_\_\_$

$x^2 + 6x \underline{+9} = -10 \underline{+9}$

$(x+3)^2 = -1$

$x+3 = \pm\sqrt{-1}$

$x = -3 \pm i$

#11) $5x^2 + 2x - 1 = 0$

$x = \frac{-2 \pm \sqrt{4 - 4(5)(-1)}}{2(5)}$

$x = \frac{-2 \pm \sqrt{24}}{10}$

$x = \frac{-2 \pm 2\sqrt{6}}{10}$

$x = \frac{-1 \pm \sqrt{6}}{5}$

p.35

#16) $\frac{4}{z} = \frac{3z}{z-3}$

$3z^2 = 4(z-3)$

$3z^2 - 4z + 12 = 0$

$z = \frac{4 \pm \sqrt{16 - 4(3)(12)}}{2(3)}$

$= \frac{4 \pm \sqrt{-128}}{6}$

$= \frac{4 \pm 8i\sqrt{2}}{6}$

$= \frac{2 \pm 4i\sqrt{2}}{3}$

$= \frac{2}{3} \pm \frac{4\sqrt{2}}{3}i$

#19) $(3x-2)^2 = 121$

$3x-2 = \pm\sqrt{121}$

$3x-2 = \pm 11$

$3x-2=11$ $\quad$ $3x-2=-11$

$3x=13$ $\quad$ $3x=-9$

$x=\frac{13}{3}$ $\quad$ $x=-3$

$-3, \frac{13}{3}$

21) $(4x+7)(x-1) = 2(x-1)$

$4x^2 + 3x - 7 = 2x - 2$

$4x^2 + x - 5 = 0$

$4x \quad + 5$

$x \quad - 1$

$(4x+5)(x-1) = 0$

$x = -\frac{5}{4}$ $\quad$ $x = 1$

#23) $2w(4w-1) = w(1-4w)$

$8w^2 - 2w = w - 4w^2$

$12w^2 - 3w = 0$

$3w(4w-1) = 0$

$3w=0$

$w=0$ $\quad$ $w=\frac{1}{4}$

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#25) $\frac{x+3}{x-3} + \frac{x-3}{x+3} = \frac{18-6x}{x^2-9}$

C.D.

$(x+3)(x-3)$ or x^2-9

$\frac{(x+3)}{(x-3)} \cdot \frac{(x+3)}{(x+3)} + \frac{(x-3)}{(x+3)} \cdot \frac{(x-3)}{(x-3)} = \frac{18-6x}{(x+3)(x-3)}$

$\frac{x^2+6x+9}{C.D.} + \frac{x^2-6x+9}{CD} = \frac{18-6x}{C.D.}$

$2x^2+18 = 18-6x$

$2x^2+6x=0$

$2x(x+3)=0$

$x=0$ keep $\quad x=-3$ reject

#27) $\frac{t^2+1}{t+2} = \frac{t}{3} + \frac{5}{t+2}$

C.D. $3(t+2)$

$\frac{t^2+1}{t+2} \cdot \frac{3}{3} = \frac{t}{3} \cdot \frac{(t+2)}{(t+2)} + \frac{5}{t+2} \cdot \frac{3}{3}$

$\frac{3t^2+3}{CD} = \frac{t^2+2t}{CD} + \frac{15}{C.D.}$

$3t^2+3 = t^2+2t+15$

$2t^2-2t-12=0$

$2(t^2-t-6)=0$

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

$t=3$ keep $\quad t=-2$ reject

#29) $2\sqrt{x} = x - 8$

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

$4x = x^2 - 16x + 64$

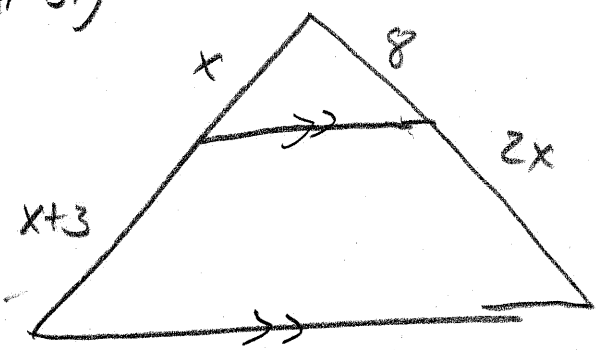
$0 = x^2 - 20x + 64$

$0 = (x-16)(x-4)$

$x = 16$ keep

~~$x = 4$~~ reject

#31)



$\frac{x}{x+3} = \frac{8}{2x}$

$2x^2 = 8x + 24$

$2x^2 - 8x - 24 = 0$

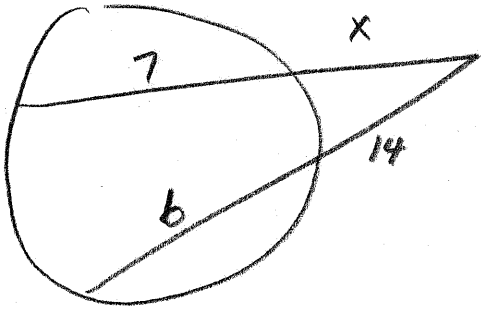
$2(x^2 - 4x - 12) = 0$

$2(x-6)(x+2) = 0$

$x = 6$ keep

~~$x = -2$~~ reject

#33)



$x(x+7) = 14(14+6)$

$x^2 + 7x = 280$

$x^2 + 7x - 280 = 0$

$x = \frac{-7 \pm \sqrt{49 - 4(1)(-280)}}{2(1)}$

$x = \frac{-7 \pm \sqrt{1169}}{2}$

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#14) $(\sqrt{3} + 4i\sqrt{2})(\sqrt{3} - 4i\sqrt{2})$

$3 - 4i\sqrt{6} + 4i\sqrt{6} - 32i^2$

$3 + 32$

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#28) $i^{46} + i^{47}$

$4\overline{)46}$ 11 r2 $\qquad$ $4\overline{)47}$ 11 r3

$i^2 + i^3$

$-1 - i$

#30) i^{-6}

$= i^{-2} \quad = i^2 \quad = -1$

p.22

#4) $h(t) = \frac{9 - 4t}{2}$

Does $h(4.5) - h(3.5) = h(1)$?

$\frac{9-4(4.5)}{2} - \frac{9-4(3.5)}{2} = \frac{9-4(1)}{2}$

$-\frac{9}{2} - \left(-\frac{5}{2}\right) = \frac{5}{2}$

$-\frac{9}{2} + \frac{5}{2} = \frac{5}{2}$

$-\frac{4}{2} \quad -\frac{5}{2}$ NO!!