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(47) $x^2+2x=9$

$x^2+2x+1=9+1$

$(x+1)(x+1)=10$

$(x+1)^2=10$

$\sqrt{(x+1)^2}=\pm\sqrt{10}$

$x+1=\pm\sqrt{10}$

$-1 \quad -1$

$x=-1\pm\sqrt{10}$

$x=-1+\sqrt{10}$ or $x=-1-\sqrt{10}$

(48) $x^2-12x=-28$

$x^2-12x+36=-28+36$

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

$(x-6)^2=8$

$\sqrt{(x-6)^2}=\pm\sqrt{8}$

$x-6=\pm\sqrt{4}\sqrt{2}$

$x-6=\pm2\sqrt{2}$

$+6 \quad +6$

$x=6\pm2\sqrt{2}$

$x=6+2\sqrt{2}$ or $x=6-2\sqrt{2}$

(49) $x^2+20x+104=0$

$x^2+20x=-104$

$x^2+20x+100=-104+100$

$(x+10)(x+10)=-4$

$(x+10)^2=-4$

$\sqrt{(x+10)^2}=\pm\sqrt{-4}$

$x+10=\pm\sqrt{4}\cdot\sqrt{-1}$

$x+10=\pm 2i$

$-10 \quad -10$

$x=-10\pm 2i$

$x=-10+2i$ or $x=-10-2i$

(50) $x^2+3x-1=0$
$+1 \quad +1$

$x^2+3x=1$

$x^2+3x+\frac{9}{4}=1+\frac{9}{4}$

$(x+\frac{3}{2})(x+\frac{3}{2})=\frac{13}{4}$

$(x+\frac{3}{2})^2=\frac{13}{4}$

$\sqrt{(x+\frac{3}{2})^2}=\pm\sqrt{\frac{13}{4}}$

$x+\frac{3}{2}=\pm\frac{\sqrt{13}}{\sqrt{4}}$

$x+\frac{3}{2}=\pm\frac{\sqrt{13}}{2}$

$-\frac{3}{2} \quad -\frac{3}{2}$

$x=-\frac{3}{2}\pm\frac{\sqrt{13}}{2}$

$x=\frac{-3+\sqrt{13}}{2}$ or $x=\frac{-3-\sqrt{13}}{2}$

(51) $u^2-4u=2u+35$
$-2u \quad -2u$

$u^2-6u=35$

$u^2-6u+9=35+9$

$(u-3)(u-3)=44$

$\sqrt{(u-3)^2}=\pm\sqrt{44}$

$u-3=\pm\sqrt{4}\cdot\sqrt{11}$

$u-3=\pm2\sqrt{11}$
$+3 \quad +3$

$u=3+2\sqrt{11}$ or
$u=3-2\sqrt{11}$

55) $\frac{2x^2-12x}{2} = \frac{-14}{2}$

$x^2-6x=-7$

$x^2-6x+9=-7+9$

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

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

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

$+3 \quad +3$

$x=3+\sqrt{2}$ or $x=3-\sqrt{2}$

56) $\frac{-3x^2+24x}{-3} = \frac{27}{-3}$

$x^2-8x=-9$

$x^2-8x+16=-9+16$

$(x-4)(x-4)=7$

$\sqrt{(x-4)^2} = \pm\sqrt{7}$

$x-4 = \pm\sqrt{7}$

$+4 \quad +4$

$x=4+\sqrt{7}$ or $x=4-\sqrt{7}$

(57) $\frac{6x^2+84x+300}{6} = \frac{0}{6}$

$x^2+14x+50 = 0$

$-50 \quad -50$

$x^2+14x = -50$

$x^2+14x+49 = -50+49$

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

$\sqrt{(x+7)^2} = \pm\sqrt{-1}$

$x+7 = \pm i$

$-7 \quad -7$

$x = -7+i$ or $x = -7-i$

(58) $\frac{4x^2+40x+280}{4} = \frac{0}{4}$

$x^2+10x+70 = 0$

$-70 \quad -70$

$x^2+10x = -70$

$x^2+10x+25 = -70+25$

$(x+5)(x+5) = -45$

$\sqrt{(x+5)^2} = \pm\sqrt{-45}$

$x+5 = \pm\sqrt{9}\sqrt{5}\sqrt{-1}$

$x+5 = \pm 3\sqrt{5}\,i$

$-5 \quad -5$

$x = -5+3\sqrt{5}\,i$ or $x = -5-3\sqrt{5}\,i$