① $n^2 - 6n - 44 = 0$

$+44 \quad +44$

$n^2 - 6n = 44$

1) $\frac{-6}{2} = -3$

2) $(-3)^2 = 9$

$n^2 - 6n + 9 = 44 + 9$

$\sqrt{(n-3)^2} = \sqrt{53}$

$n - 3 = \pm\sqrt{53}$

$+3 \quad +3$

$n = 3 \pm \sqrt{53}$

② $x^2+2x-6=0$

$+6 \quad +6$

$x^2+2x=6$

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

2) $1^2=1$

$x^2+2x+1=6+1$

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

$x+1=\pm\sqrt{7}$

$-1 \quad -1$

$x=-1\pm\sqrt{7}$

(3) $k^2+12k-64=0$

$+64 \quad +64$

$k^2+12k=64$

1) $\frac{12}{2}=6$

2) $6^2=36$

$k^2+12k+36=64+36$

$\sqrt{(k+6)^2}=\sqrt{100}$

$k+6=\pm 10$

$-6 \quad -6$

$k=-6\pm 10$

$k=-6+10=4$

$k=-6-10=-16$

$\{4,-16\}$

(4) $a^2+2a-3=0$

$+3 \quad +3$

$a^2+2a=3$

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

2) $1^2=1$

$a^2+2a+1=3+1$

$\sqrt{(a+1)^2}=\sqrt{4}$

$a+1=\pm 2$

$-1 \quad -1$

$a=-1\pm 2$

$a=-1+2=1$

$a=-1-2=-3$

$\{1,-3\}$

(5) $x^2+2x-35=0$

$+35 \quad +35$

$x^2+2x=35$

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

2) $1^2=1$

$x^2+2x+1=35+1$

$\sqrt{(x+1)^2}=\sqrt{36}$

$x+1=\pm 6$

$-1 \quad -1$

$x=-1\pm 6$

$x=-1+6=5$

$=-1-6=-7$

$\{5,-7\}$

⑥ $x^2+3x-12=0$

$+12 \quad +12$

$x^2+3x=12$

1) $\frac{3}{2}$

2) $\left(\frac{3}{2}\right)^2=\frac{9}{4}$

$x^2+3x+\frac{9}{4}=12+\frac{9}{4}$

$\sqrt{\left(x+\frac{3}{2}\right)^2}=\sqrt{\frac{57}{4}}$

$x+\frac{3}{2}=\frac{\pm\sqrt{57}}{2}$

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

$x=-\frac{3}{2}\pm\frac{\sqrt{57}}{2}$

7) $b^2 - 7b - 3 = 0$

$+3 \quad +3$

$b^2 - 7b = 3$

1) $\frac{-7}{2}$

2) $\left(\frac{-7}{2}\right) = \frac{49}{4}$

$b^2 - 7b + \frac{49}{4} = 3 + \frac{49}{4}$

$\sqrt{\left(b - \frac{7}{2}\right)^2} = \sqrt{\frac{61}{4}}$

$b - \frac{7}{2} = \pm\frac{\sqrt{61}}{2}$

$+\frac{7}{2} \quad +\frac{7}{2}$

$b = \frac{7}{2} \pm \frac{\sqrt{61}}{2}$

(8) $n^2 - 7n + 7 = 0$

$-7 \quad -7$

$n^2 - 7n = -7$

1) $\frac{-7}{2}$

2) $\left(\frac{-7}{2}\right)^2 = \frac{49}{4}$

$n^2 - 7n + \frac{49}{4} = -7 + \frac{49}{4}$

$\sqrt{\left(n - \frac{7}{2}\right)^2} = \sqrt{\frac{21}{4}}$

$n - \frac{7}{2} = \pm\frac{\sqrt{21}}{2}$

$+\frac{7}{2} \quad +\frac{7}{2}$

$n = \frac{7}{2} \pm \frac{\sqrt{21}}{2}$

(9) $p^2 - p - 6 = 0$
$+6 \quad +6$

$p^2 - p = 6$

$p^2 - p + \frac{1}{4} = 6 + \frac{1}{4}$

$\sqrt{(p - \frac{1}{2})^2} = \sqrt{\frac{25}{4}}$

$p - \frac{1}{2} = \pm \frac{5}{2}$
$+\frac{1}{2} \quad +\frac{1}{2}$

1) $-\frac{1}{2}$

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

$p = \frac{1}{2} \pm \frac{5}{2}$

$\frac{1}{2} + \frac{5}{2} = \frac{6}{2} = 3$

$\frac{1}{2} - \frac{5}{2} = \frac{-4}{2} = -2$

$\{3, -2\}$

(10) $2r^2 - 12r + 16 = 0$

$-16 \quad -16$

$2r^2 - 12r = -16$

$\frac{2r^2}{2} - \frac{12r}{2} = \frac{-16}{2}$

$r^2 - 6r = -8$

1) $\frac{-6}{2} = -3$

2) $(-3)^2 = 9$

$r^2 - 6r + 9 = -8 + 9$

$\sqrt{(r-3)^2} = \sqrt{1}$

$r - 3 = \pm 1$

$+3 \quad +3$

$r = 3 \pm 1$

$= 3 + 1 = 4$

$= 3 - 1 = 2$

$\{4, 2\}$

(11) $5x^2+10x-45=0$

$+45 \quad +45$

$5x^2+10x=45$

$\frac{5}{5} \quad \frac{10}{5} \quad \frac{45}{5}$

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

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

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

$x+1=\sqrt{10}$

$-1 \quad -1$

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

(12) $5n^2+10n-23=0$

$+23 \quad +23$

$\frac{5n^2}{5}+\frac{10n}{5}=\frac{23}{5}$

$n^2+2n=\frac{23}{5}$

$n^2+2n+1=\frac{23}{5}+1$

$\sqrt{(n+1)^2}=\sqrt{\frac{28}{5}}$ $\quad \sqrt{4}\sqrt{7}=2\sqrt{7}$

$n+1=\frac{\pm 2\sqrt{7}}{\sqrt{5}}\cdot\frac{\sqrt{5}}{\sqrt{5}}$

$n+1=\frac{\pm 2\sqrt{35}}{5}$

$-1 \quad -1$

$n=-1\pm\frac{2\sqrt{35}}{5}$

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

2) $1^2=1$