$x^2+4x-12$

$a=1, b=4, c=-12$

$b^2-4ac = 4^2-4(1)(-12)$

$= 16+48 = 64$ Discriminant

Quad formula

$$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}=\frac{-4\pm\sqrt{64}}{2(1)}=\frac{-4\pm 8}{2}$$

$$=\frac{2(-2\pm 4)}{2}=-2\pm 4$$

$2 = x$

$-6 = x$

Factoring $x^2+4x-12=(x+6)(x-2)=0 \rightarrow$

$x+6=0 \quad x-2=0$

$x=-6 \quad x=2$

$x\in\{-6,2\}$

Completing Square

$x^2+4x-12=0$

$x^2+4x+2^2 = 12+4$

$\frac{4}{2}=2 \rightarrow 2^2=4$

$(x+2)^2=16$

$x+2=\pm\sqrt{16}=\pm 4$

$x=-2\pm 4$

Lines S' 1.4 #s 73-94

Perpendicular to $y = \frac{2}{3}x + 5$ & (2, -3) is on it.

$m_\perp = -\frac{1}{m}$ Perp

$m_{||} = m$ Parallel

$m = \frac{2}{3} \Rightarrow m_\perp = -\frac{3}{2}$

$y = m_\perp(x - x_1) + y_1$

$y = -\frac{3}{2}(x-2) + (-3)$ Perfect, to Steve. Loves Point-Slope

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

$y = -\frac{3}{2}x$ Book likes slope-intercept.

$6x^2+7x+2=0$

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

$6\left(x^2+\frac{7}{6}x = -\frac{2}{6} = -\frac{1}{3}\right)$

$\frac{144}{3} = 48$

$x^2+\frac{7}{6}x+\left(\frac{7}{12}\right)^2 = -\frac{1}{3}+\frac{49}{144} = -\frac{1}{3}\cdot\frac{48}{48}+\frac{49}{144}$

$= \frac{1}{144}$

$\frac{\frac{7}{6}}{2} = \frac{7}{12} \rightarrow \left(\frac{7}{12}\right)^2$

$\left(x+\frac{7}{12}\right)^2 = \frac{1}{144}$

$x+\frac{7}{12} = \pm\frac{1}{12}$

$x = -\frac{7}{12}\pm\frac{1}{12}$ → $-\frac{8}{12} = -\frac{2}{3}$, $\frac{6}{12} = 1/2$

Hidden Moves:

$\sqrt{\left(x+\frac{7}{12}\right)^2} = \sqrt{\frac{1}{144}}$

$\left|x+\frac{7}{12}\right| = \frac{1}{12}$

$x \in \left\{-\frac{2}{3}, \frac{1}{2}\right\}$.

3 2

$6\left(x+\frac{2}{3}\right)\left(x-\frac{1}{2}\right)$

$= 3\cdot 2\left(x+\frac{2}{3}\right)\left(x-\frac{1}{2}\right)$

$= 3\left(x+\frac{2}{3}\right)(2)\left(x-\frac{1}{2}\right)$

$(3x+2)(2x-1)$ is factored form.

You can ALWAYS REVERSE-ENGINEER FACTORED FORM!