$$3\left(x^2-\frac{2}{3}\right)=4 \quad (1)$$

expand

$$3x^2-2=4 \quad (2)$$

$+2$

$$3x^2=6 \quad (3)$$

isolate the term with the variable

$\div 3$

$$x^2=2 \quad (4)$$

$\sqrt{\cdots}$

$$\sqrt{x^2}=\sqrt{2} \quad (5)$$

$\sqrt{x}=|x|$

$$|x|=\sqrt{2} \quad (6)$$

so that

$$x=\pm\sqrt{2} \quad (7)$$

This example is from MathMode.pdf of Herbert Voß

$$y=2x^2-3x+5$$

$2x^2-3x$ is the beginning of an algebraic identity (binomial formula)

$$=2\left(\underbrace{x^2-\frac{3}{2}x+\left(\frac{3}{4}\right)^2}_{=0}-\left(\frac{3}{4}\right)^2+\frac{5}{2}\right)$$

$(a-b)^2=a^2-2ab+b^2$

$$=2\left(\left(x-\frac{3}{4}\right)^2+\frac{31}{16}\right)$$

after simplication, the result is

$$y=2\left(x-\frac{3}{4}\right)^2+\frac{31}{8}$$