Leysið þessar jöfnur:

1. $x^2 - 49 = 0$

$(x+7)(x-7) = 0$ $\quad x_1 = 7$, $x_2 = -7$

---

2. $7x^2 - 5x - 4 = 0$

$a = 7$, $b = -5$, $c = -4$

$d = b \cdot b - 4ac$

$= 25 - 4 \cdot 7(-4)$

$= 25 + 112$

$= 137$

$x = \frac{-b \pm \sqrt{d}}{2a} = \frac{-(-5) \pm \sqrt{137}}{2 \cdot 7}$

$= \frac{5 \pm 11{,}70}{14} = \begin{cases} \frac{5+\sqrt{137}}{14} = 1{,}19 \\ \frac{5-\sqrt{137}}{14} \simeq -0{,}48 \end{cases}$

---

3. $x^2 + 18x + 45 = 0$

$(x+3)(x+15) = 0$

þátta $\quad x+3=0 \quad x+15=0$

$x = -3 \quad x = -15$

---

4. $3x^2 + 6x = 0$ $\quad 3 \cdot x \cdot x + 2 \cdot 3x = 0$

$3x(x+2) = 0$

þátta $\quad x_1 = 0$ og $x+2=0$, $x_2 = -2$

---

5. $2x^2 - 2x - 24 = 0$

þátta $\quad 2(x^2 - x - 12) = 0$

$2(x+3)(x-4) = 0$

$x+3=0 \quad x-4=0$

$x_1 = -3 \quad x_2 = 4$

6. $x^2-5x-3=0$

$a=1$
$b=-5$
$c=-3$
$d=(-5)^2-4\cdot1\cdot(-3)=25+12=37$

$$x=\frac{-(-5)\pm\sqrt{37}}{2\cdot1}=\frac{5\pm\sqrt{37}}{2}\simeq \begin{matrix}5{,}54\ldots\\ -0{,}54\ldots\end{matrix}$$

7. $x^2+2x-1=0$

$a=1$
$b=2$
$c=-1$
$d=2^2-4\cdot1(-1)$
$=4+4=8$

$$x=\frac{-2\pm\sqrt{8}}{2\cdot1}=\frac{-2\pm\sqrt{24}}{2}=\frac{-2\pm2\sqrt{2}}{2}$$

$$=\frac{-1\pm\sqrt{2}}{}\simeq \begin{cases}0{,}414\ldots\\ -2{,}414\ldots\end{cases}$$

8. $x^2-9x+14=0$

$(x-2)(x-7)=0$

$x-2=0$ $\quad x-7=0$

$x_1=2$ $\quad x_2=7$

9. $5x^2-10x-15=0$

$=5(x^2-2x-3)=0$

$5(x-3)(x+1)=0$

$x-3=0$ $\quad x+1=0$

$x=3$ $\quad x=-1$

10. $2x^2+8x-42=0$

$2(x^2+4x-21)=0$

$2(x+7)(x-3)=0$

$x+7=0$ $\quad x-3=0$

$x=-7$ $\quad x=3$