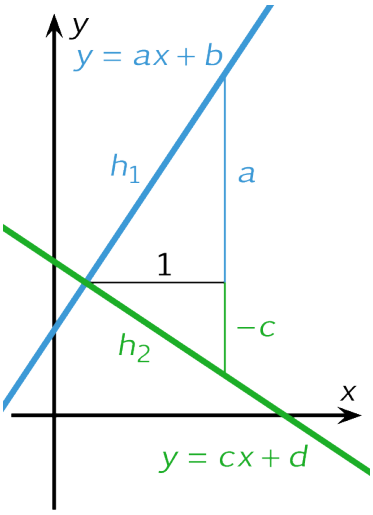
Formlen for hældninger mellem ortogonale linjer $a \cdot c = -1$

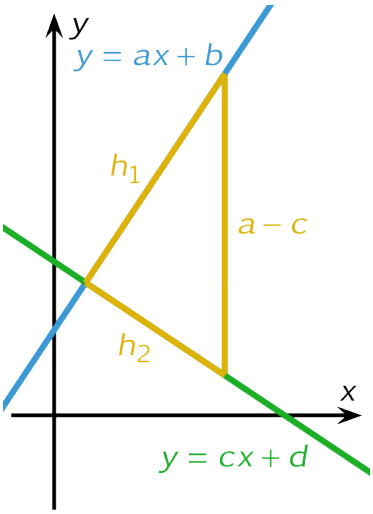
(1) Tegn figur:



(2) Beskriv de to retvinklede trekanter og opskriv udtryk for deres hypotenuser:

$$h_1 = \sqrt{1^2 + (-c)^2} \quad \text{og} \quad h_2 = \sqrt{1^2 + a^2}$$

(3) Tilføj den store trekant på figuren:



(3) Opskriv udtryk for $(a-c)^2$ og "isolér" ac:

$$\begin{aligned}
(a-c)^2 &= h_1^2 + h_2^2 \\
(a-c)^2 &= \left(\sqrt{1^2+(-c)^2}\right)^2 + \left(\sqrt{1^2+a^2}\right)^2 \\
a^2+c^2-2ac &= 1^2+(-c)^2+1^2+a^2 \\
a^2+c^2-2ac &= a^2+c^2+2 \\
-2ac &= a^2-a^2+c^2-c^2+2 \\
ac &= \frac{2}{-2} \\
ac &= -1
\end{aligned}$$