

$$\begin{aligned}
y &= x^2 + bx + c \\
&= x^2 + 2 \cdot \frac{b}{2}x + c \\
&= \underbrace{x^2 + 2 \cdot \frac{b}{2}x + \left(\frac{b}{2}\right)^2}_{\left(x + \frac{b}{2}\right)^2} - \left(\frac{b}{2}\right)^2 + c \\
&= \left(x + \frac{b}{2}\right)^2 - \left(\frac{b}{2}\right)^2 + c \quad \left| + \left(\frac{b}{2}\right)^2 - c \right. \\
y + \left(\frac{b}{2}\right)^2 - c &= \left(x + \frac{b}{2}\right)^2 \quad \left| \text{((Scheitelpunktform))} \right. \\
y - y_S &= (x - x_S)^2 \\
S(x_S; y_S) \quad \text{bzw.} \quad S\left(-\frac{b}{2}; \left(\frac{b}{2}\right)^2 - c\right)
\end{aligned}$$

$$\left(\begin{array}{cccc}
\boxed{\begin{array}{cc} a_{11} & a_{12} \\ a_{21} & a_{22} \end{array}} & & 0 & 0 \\
& \boxed{\begin{array}{ccc} b_{11} & b_{12} & b_{13} \\ b_{21} & b_{22} & b_{23} \\ b_{31} & b_{32} & b_{33} \end{array}} & & 0 \\
& & & \boxed{\begin{array}{cc} c_{11} & c_{12} \\ c_{21} & c_{22} \end{array}} \\
0 & & 0 & &
\end{array} \right)$$