17. We can construct a parallellogram with sides $|\mathbf{x}|, |\mathbf{y}|$ and diagonals $|\mathbf{x}+\mathbf{y}|, |\mathbf{x}-\mathbf{y}|$. It holds that

$$\begin{aligned} |\mathbf{x}+\mathbf{y}|^2 + |\mathbf{x}-\mathbf{y}|^2 &= |\mathbf{x}|^2 + 2\mathbf{x}\cdot\mathbf{y} + |\mathbf{y}|^2 + |\mathbf{x}|^2 - 2\mathbf{x}\cdot\mathbf{y} + |\mathbf{y}|^2 \\ &= 2|\mathbf{x}|^2 + 2|\mathbf{y}|^2, \end{aligned}$$

meaning that the sum squared of the parallelogram's four sides equals two times the sum squared of its two diagonals.

□