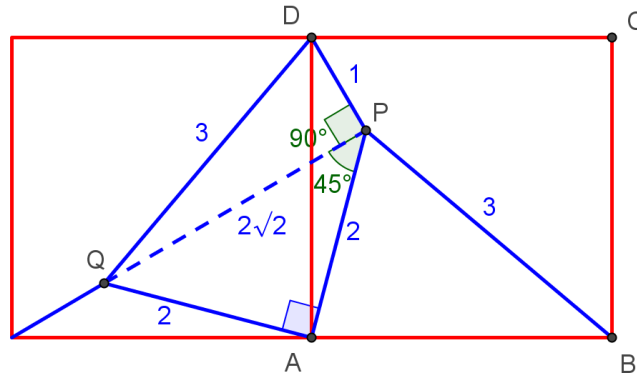


Solution 1:

Rotating the square anticlockwise about A by 90° gives:



QA has length 2 and QAP is 90° therefore QPA is 45° and QP has length $2\sqrt{2}$.

$1^2 + (2\sqrt{2})^2 = 3^2$ therefore DPQ is 90° .

$$\begin{aligned}\alpha &= 45^\circ + 90^\circ \\ &= 135^\circ\end{aligned}$$