

The question requests we determine the maximal area, so we substitute  $p = \sqrt{2} - 1$  into equation (8) and simplify. We acquire

$$\begin{aligned}
 A_{\max} &= 1 - \frac{\sqrt{2} - 1}{2} + \frac{\sqrt{2} - 1 - 1}{2(\sqrt{2} - 1 + 1)} \\
 &= 1 - \frac{\sqrt{2} - 1}{2} + \frac{\sqrt{2} - 2}{2\sqrt{2}} \\
 &= \frac{2\sqrt{2} - 2 + \sqrt{2} + \sqrt{2} - 2}{2\sqrt{2}} \\
 &= \frac{4\sqrt{2} - 4}{2\sqrt{2}} \\
 &= 2 - \sqrt{2}
 \end{aligned}$$

as required.

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