Problem of the Week

Proposed by Bernardo Ábrego and Silvia Fernández

March 27-April 3

Let $ABCD$ be a rectangle. Construct P on BD such that AP is perpendicular to BD. Construct E and F on BC and CD respectively such that PE is perpendicular to BC and PF to CD. Prove that

$$\left(\frac{PE}{BD}\right)^{2/3} + \left(\frac{PF}{BD}\right)^{2/3} = 1.$$