Two physical experiments are instructive:

1. How do you create an angle of $\cos^{-1}\left(-\frac{1}{3}\right)$ by a single fold in a sheet of A4 paper? The Note [2] provides the answer.
2. The minimal surface can be produced as a soap film in a skeletal tetrahedron.

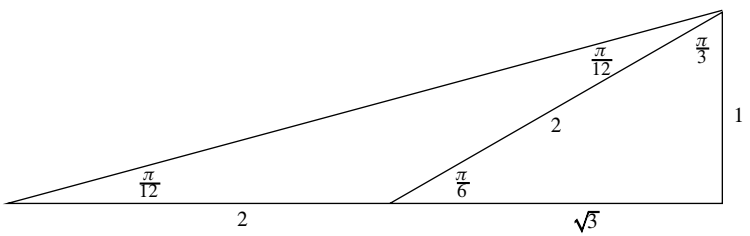
The special tetrahedron exhibits the following property. Uniquely among right pyramids on a regular polygonal base, the facial angle at the apex of this tetrahedron is equal to the apical angle of the inscribed cone, $\cos^{-1}\left(-\frac{1}{3}\right)$ as noted. For the pyramid whose base is the regular n-gon, if the facial and apical angles are equal, they are both $2\cos^{-1}\left(\cot\frac{\pi}{n}\right)$, which has no valid solution beyond $n = 3$.

References

1. N. Lord, How to impress a chemist - again!, *Math. Gaz.* **106** (March 2022) pp. 149-150.
2. N. Lord, A 'maths bite': how to impress a chemist, *Math. Gaz.* **80** (November 1996) p. 584.

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On Feedback July 2022: Bob Burn writes: Here is a solution to the problem posed by Martin Lukarevski in [1].



Obviously $\tan\frac{5}{12}\pi = 2 + \sqrt{3}$.

Reciprocating both sides we get $\tan\frac{1}{12}\pi = 2 - \sqrt{3}$.

1. Feedback on 'What makes a good Proof without Words', *Math. Gaz.* **106** (July 2022) p. 349.

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