Sacred Square Cuts Among Even-Sided Polygons

>> Search range is from 2 to 100 <<

2p 8-Gon
Angle No.1, Sin (45 degrees / 2) = 0.76536686473018 / 2
Angle No.2, Sin (90 degrees / 2) = 1.41421356237309 / 2
Angle No.3, Sin (135 degrees / 2) = 1.84775906502257 / 2
Angle No.4, Sin (180 degrees / 2) = 2 / 2

When the reciprocal of Angle No.1 (1.30656296487638) is multiplied by Angle No.3 (1.84775906502257), then this equals the length of a diagonal: 2.41421356237309. Likewise, when Angle No.1 (0.76536686473018) is multiplied by the reciprocal of Angle No.3 (0.541196100146197), then this yields the length of another diagonal: - 0.414213562373095.
And when the first diagonal is divided by the second diagonal, and when the second diagonal is divided by the first diagonal, then this yields the two roots of a quadratic polynomial:
{2.41421356237309, - 0.414213562373095} = $x^2 - 2x - 1$

3p 12-Gon
Angle No.1, Sin (30 degrees / 2) = 0.517638090205041 / 2
Angle No.2, Sin (60 degrees / 2) = 1 / 2
Angle No.3, Sin (90 degrees / 2) = 1.41421356237309 / 2
Angle No.4, Sin (120 degrees / 2) = 1.73205080756888 / 2
Angle No.5, Sin (150 degrees / 2) = 1.93185165257814 / 2
Angle No.6, Sin (180 degrees / 2) = 2 / 2

When the reciprocal of Angle No.1 (1.93185165257814) is multiplied by Angle No.3 (1.41421356237309), then this equals the length of a diagonal: 2.73205080756888. Likewise, when Angle No.3 (1.41421356237309) is multiplied by the reciprocal of Angle No.5 (0.517638090205041), then this yields the length of another diagonal: - 0.732050807568877.
And when the first diagonal is divided by the second diagonal, and when the second diagonal is divided by the first diagonal, then this yields the two roots of a quadratic polynomial:
{2.73205080756888, - 0.732050807568877} = $x^2 - 2x - 2$.

When the reciprocal of Angle No.1 (1.93185165257814) is multiplied by Angle No.5 (1.93185165257814), then this equals the length of a diagonal: 3.73205080756888. Likewise, when Angle No.1 (0.517638090205041) is multiplied by the reciprocal of Angle No.5 (0.517638090205041), then this yields the length of another diagonal: + 0.267949192431123.
And when the first diagonal is divided by the second diagonal, and when the second diagonal is divided by the first diagonal, then this yields the two roots of a quadratic polynomial:
{3.73205080756888, + 0.267949192431123} = $x^2 - 4x + 1$.

When the reciprocal of Angle No.3 (0.707106781186548) is multiplied by Angle No.5 (1.93185165257814), then this equals the length of a diagonal: 1.36602540378444. Likewise, when Angle No.1 (0.517638090205041) is multiplied by the reciprocal of Angle No.3 (0.707106781186548), then this yields the length of another diagonal: - 0.366025403784439.
And when the first diagonal is divided by the second diagonal, and when the second diagonal is divided by the first diagonal, then this yields the two roots of a quadratic polynomial:

{1.36602540378444, - 0.366025403784439} = 2x^2 + 2x - 1.

5p 20-Gon
Angle No.1, Sin (18 degrees / 2) = 0.312868930080462 / 2
Angle No.2, Sin (36 degrees / 2) = 0.618033988749895 / 2
Angle No.3, Sin (54 degrees / 2) = 0.907980999479093 / 2
Angle No.4, Sin (72 degrees / 2) = 1.17557050458495 / 2
Angle No.5, Sin (90 degrees / 2) = 1.41421356237309 / 2
Angle No.6, Sin (108 degrees / 2) = 1.61803398874989 / 2
Angle No.7, Sin (126 degrees / 2) = 1.78201304837674 / 2
Angle No.8, Sin (144 degrees / 2) = 1.90211303259031 / 2
Angle No.9, Sin (162 degrees / 2) = 1.97537668119028 / 2
Angle No.10, Sin (180 degrees / 2) = 2 / 2

When the reciprocal of Angle No.2 (1.61803398874989) is multiplied by Angle No.6 (1.61803398874989), then this equals the length of a diagonal: 2.61803398874989.
Likewise, when Angle No.2 (0.618033988749895) is multiplied by the reciprocal of Angle No.6 (0.618033988749895), then this yields the length of another diagonal: + 0.381966011250105.
And when the first diagonal is divided by the second diagonal, and when the second diagonal is divided by the first diagonal, then this yields the two roots of a quadratic polynomial:
{2.61803398874989, + 0.381966011250105} = x^2 - 3x + 1.

When the reciprocal of Angle No.2 (1.61803398874989) is multiplied by Angle No.10 (2), then this equals the length of a diagonal: 3.23606797749979.
Likewise, when Angle No.6 (1.61803398874989) is multiplied by the reciprocal of Angle No.10 (0.5), then this yields the length of another diagonal: - 1.23606797749979.
And when the first diagonal is divided by the second diagonal, and when the second diagonal is divided by the first diagonal, then this yields the two roots of a quadratic polynomial:
{3.23606797749979, - 1.23606797749979} = x^2 - 2x - 4.

When the reciprocal of Angle No.4 (0.85065080835204) is multiplied by Angle No.8 (1.90211303259031), then this equals the length of a diagonal: 1.61803398874989.
Likewise, when Angle No.4 (1.17557050458495) is multiplied by the reciprocal of Angle No.8 (0.525731112119134), then this yields the length of another diagonal: - 0.618033988749895.
And when the first diagonal is divided by the second diagonal, and when the second diagonal is divided by the first diagonal, then this yields the two roots of a quadratic polynomial:
{1.61803398874989, - 0.618033988749895} = x^2 - x - 1.

When the reciprocal of Angle No.6 (0.618033988749895) is multiplied by Angle No.10 (2), then this equals the length of a diagonal: 1.23606797749979.
Likewise, when Angle No.2 (0.618033988749895) is multiplied by the reciprocal of Angle No.10 (0.5), then this yields the length of another diagonal: - 3.23606797749979.
And when the first diagonal is divided by the second diagonal, and when the second diagonal is divided by the first diagonal, then this yields the two roots of a quadratic polynomial:
{1.23606797749979, - 3.23606797749979} = x^2 + 2x - 4.