\[ 57 = 56 + 1 \]

\[ 57 = 3 \cdot 19 \]

\( \mathbb{R}(\sqrt{37}) \) is a Euclidean Domain.

\[ 57 = 2^5 + 5^2 \quad \text{(Leyland number)} \]

Four dimensional self dual abstract regular polytope, pentacosaheplachoron, has 57 cells.

Blum integer
Leyland number: \[ 57 = 2^5 + 5^2 \]

Smallest number the sum of 3 distinct primes 10 ways
\[ 57 = 3 + 7 + 47 \]
\[ = 3 + 11 + 43 \]
\[ = 3 + 13 + 41 \]
\[ = 3 + 17 + 37 \]
\[ = 3 + 23 + 31 \]
\[ = 5 + 11 + 41 \]
\[ = 5 + 23 + 29 \]
\[ = 7 + 13 + 37 \]
\[ = 7 + 19 + 31 \]
\[ = 11 + 17 + 29 \]

57. Spheres have smallest convex hull when not in line.
57 is an idoneal number.

57. \[ 2^{25} - 1 \] is prime.
57. \[ 1825 + 1 \] is a Proth prime.