$$(1.55)^{1/2} = \sum_{k=0}^{5} \binom{\frac{1}{2}}{k} 0.55^k$$

$$\binom{\frac{1}{2}}{0} 0.55^0 + \binom{\frac{1}{2}}{1} 0.55^1 + \binom{\frac{1}{2}}{2} 0.55^2$$

$$1 \quad + \quad 0.275$$

$$\frac{(\frac{1}{2})(-\frac{1}{2})}{2} \times 0.55^2$$

$$\times 0.3025$$

$$-0.0378$$

$$\binom{\frac{1}{2}}{3} 0.55^3$$

$$\frac{(\frac{1}{2})(-\frac{1}{2})(-\frac{3}{2})}{6} \times 0.55^3$$

$$0.003466146$$

$$\binom{\frac{1}{2}}{4} 0.55^4$$

$$\frac{(\frac{1}{2})(-\frac{1}{2})(-\frac{3}{2})(-\frac{5}{2})}{24} \times 0.55^4$$

$$-0.002859570$$

$$\binom{\frac{1}{2}}{5} 0.55^5$$

$$\frac{(\frac{1}{2})(-\frac{1}{2})(-\frac{3}{2})(-\frac{5}{2})(-\frac{7}{2})}{120} \times 0.55^5$$

$$0.003931909$$

$$= 1.241738485$$

$\sqrt{3} = \frac{p}{q}$

$p = \sqrt{3}\, q$

$p^2 = 3q^2 \longrightarrow ①$

$\frac{p^2}{3} = q^2$

3 is a Factor of p

$p = 3c$ c is constant

$3c^2 = 3q^2$

$9c^2 = 3q^2$

$3c^2 = q^2 \rightarrow c^2 = \frac{q^2}{3}$

$\therefore$ 3 is also a Factor of q.

contratuction

then $\sqrt{3}$ irrational

$\frac{15}{10} = 1.5 \qquad \frac{21}{15}\ 1.4 \qquad \frac{29}{21}\ 1.38$

k	1	2	3
1^k	1	1	1

~~[illegible]~~

~~[illegible]~~

10, 15, 21, 29, 40

5, 6, 8, 11

1, 2, 3

1, 1

$$10\binom{n}{0} + 5\binom{n}{1} + 1\binom{n}{2} + 1\binom{n}{3}$$

$$a_{50} = 10\binom{50}{0} + 5\binom{50}{1} + 1\binom{50}{2} + 1\binom{50}{3}$$

$$= 21085$$

3 (inverse of 4) mod 4

$4x^2 = 3 \mod 19$

$19 = 4 \times 4 + 3$

$4 = 1 \times 3 + \boxed{1}$ gcd

$3 = 3 \times 1 + 0$

$1 = 4 - 1 \times 3$

~~[illegible]~~

~~[illegible]~~

$= 4(19 - 4 \times 4)$

$4 \times 19 - 16 \times 4$

$x^2 = 3(-16) \mod 19$

$= -48 \mod 19$

$\equiv 9 \mod 19$

$x = 3 \qquad x = 16$

x	x^2	$x^2 \mod 19$
1	1	1
2	4	4
3	9	$\boxed{9}$
4	16	16
5	25	6
6	36	17
7	49	11
8	~~16~~ 64	
9	81	
10	100	
11	121	
12	144	
13	169	
14	196	
15	225	
$\boxed{16}$	$\boxed{256}$	
17	289	
18	324	