

1-masala.

Isbotlang: barcha $n \geq 2$ uchun

$$\left(1 + \frac{1}{n}\right)^n < 3.$$

2-masala.

Isbotlang: barcha $n \geq 4$ uchun

$$2^n > n^3.$$

3-masala.

Isbotlang:

$$C(n, 0) + 2 C(n, 1) + 3 C(n, 2) + \dots + n C(n, n-1) = n 2^{n-1}.$$

4-masala.

Isbotlang: barcha $n \geq 1$ uchun

$$\sqrt{1} + \sqrt{2} + \dots + \sqrt{n} \leq n \sqrt{n}.$$

5-masala.

$$a_1 = 2, \quad a_{n+1} = 3 a_n + 2.$$

Isbotlang: $a_n = 3^n - 1$.

6-masala.

Isbotlang: barcha $n \geq 1$ uchun

$n^3 + 2n$ har doim 3 ga bo'linadi.

7-masala.

Isbotlang:

$$1^3 + 2^3 + 3^3 + \dots + n^3 = \left(\frac{n(n+1)}{2}\right)^2.$$

8-masala.

Isbotlang: barcha $n \geq 1$ va $1 \leq k \leq n$ uchun

$$C(n+1, k) = C(n, k) + C(n, k-1).$$

9-masala.

Isbotlang:

$$C(n, 1) + C(n, 2) + \dots + C(n, n) = 2^n - 1.$$

10-masala.

Isbotlang:

Har bir $n \geq 1$ uchun $2 \times n$ o'lchamli taxtani 2×1 o'lchamdagi domino bo'laklar bilan to'liq qoplash mumkin bo'lgan holatlar soni F_{n+1} ga teng (Fibonachchi ketma-ketligi).