

سؤال ۱؟

$$n^2 + \frac{n(n-1)}{2}$$

$$10^2 + \frac{10(10-1)}{2} = 100 + 45 = 145$$

سؤال ۲؟

$$\frac{n(n-1)}{2} = 55$$

$$n(n-1) = 110$$

$$\rightarrow 11 \times 10 = 110$$

$$\boxed{n=11}$$

سؤال ۱۱؟

رنگی: $5, 13, 25, \dots$

$$\rightarrow 4n+1 \rightarrow 4 \times 11 + 1 = 44 + 1 = 45$$

سفید: $0, 4, 16, \dots$

$$\rightarrow 4n-4 \rightarrow 4 \times 11 - 4 = 44 - 4 = 40$$

کل مهره ها = $45 + 40 = 85$

سؤال ۴؟

$$a_n = \frac{(-1)^n}{n}$$

$$a_1 = \frac{-1}{1} = -1$$

$$a_2 = \frac{1}{2}$$

$$a_3 = \frac{-1}{3}$$

$$a_4 = \frac{1}{4}$$

$$\vdots$$

$$\frac{1}{4} - (-1) = \frac{5}{4}$$

سؤال ۵؟

$$b_n = (-3)^n - v_n$$

$$b_3 = (-3)^3 - v \times 3 = -27 - 21 = -48$$

$$-5n + 22 = -48$$

$$-5n = -48 - 22 = -70$$

$$n = \frac{70}{5} = 14$$

$$a_{10} - a_v = 12$$

$$a_4 - a_1 = ?$$

$$a_{10} = a_v + 6d \rightarrow a_{10} - a_v = 6d = 12 \rightarrow d = 2$$

$$a_{10} = a_1 + 9d$$

$$a_4 - a_1 = a_1 + 3d - a_1 = 3 \times 2 = 6$$

$$a_v = a_1 + 9d$$

$$a_1 = 1, a_4 = 10$$

$$a_4 = a_1 + 3d = 10$$

$$3d = 10 - 1 = 9 \rightarrow d = 3$$

$$a_1, a_4, a_7, a_{10}, \dots$$

$$b_1 = 1, b_2 = 11$$

$$1, 11, 19, \dots$$

$$\sqrt{4n-3}$$

$$b_n = 4n - 3$$

$$t_n = \frac{1}{1}, \frac{4}{4}, \frac{9}{9}, \frac{16}{16}, \dots$$

(در حالی که یک تا بیست و یک)

$$t_n = \frac{n^2}{n^2 + 1}$$

$$\frac{n^2 - 1}{n^2 + 1} < \frac{1}{n}$$

$$\frac{1}{n} < n < \frac{1}{1/n} = n$$

$$n^2 + 1 \neq 0$$

$$n = -\frac{1}{n}$$

$$n(n-1) > 1(n+1)$$

$$n^2 - 1 > n + 1 \rightarrow n > 2$$

$$n > \frac{1}{n}$$

$$t_n = \frac{1}{1}, \frac{4}{4}, \frac{9}{9}, \frac{16}{16}, \dots$$

$$t_n = An^2 + Bn$$

$$a_n^2 + b_n^2 + c_n^2$$

$$A + B = 1$$

$$1 \times \frac{1}{1} + 0 \times \frac{1}{1} =$$

$$\frac{1}{1} + \frac{0}{1} = \frac{1}{1} = 1$$

$$1a = -1 \rightarrow a = -1$$

$$-\frac{1}{n}x + bx = 1$$

$$b = 1 + \frac{1}{n} = \frac{n+1}{n}$$

$$t_n = -\frac{1}{n}, -\frac{1}{n}, \dots$$

$$t_n = n^2 - n - 1$$

در حالی که

$$a_1 = 1, a_2 = 1$$

$$a_2 = a_1 + d \rightarrow d = 0, d = 0$$

$$1, 1, 1, 1, \dots$$

$$a_n = 0n + 1$$

در حالی که در آن -1 است
C = -1

$$n^2 - n - 1 = 0n + 1$$

$$n^2 = n + 1$$

$$n(n-1) = 1$$

$$\Rightarrow n = 2$$

در حالی که