

$$E_n = n^2 + \frac{(n-1)n}{2} \rightarrow (10)^2 + \frac{9 \times 10}{2} = 145$$

$$E_{10} = 148 \quad \checkmark$$

$$E_n = \frac{n \times (n-1)}{2} \rightarrow \frac{n \times (n-1)}{2} = 110 \rightarrow n \times (n-1) = 220$$

$$n = 11 \quad \checkmark$$

$$E_n = E_{n+1} \rightarrow E_n = 4E_{n+1} \rightarrow E_n = 11 - 2 = 15$$

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

$$n = 2k \rightarrow \frac{(-1)^{2k}}{2k} = \frac{1}{2k}$$

$$n = 2k-1 \rightarrow \frac{(-1)^{2k-1}}{2k-1} = -\frac{1}{2k-1}$$

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

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$$a_0 = a_1 = 11 \rightarrow a_1 + qd - a_1 - 4d = 11 \rightarrow 4d = 11$$

$$a_0 - a_1 = a_1 + 3d - a_1 = 3d = 3 \times 11 = 33$$

$$a_0 = 11 \quad a_1 = 18 \rightarrow d = \frac{18-11}{1-0} = \frac{7}{1} = 7 \rightarrow a_n = 11 + 7(n-1)$$

$$11, 18, 25, 32, \dots$$

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$$a_n = \frac{1}{8}, \frac{1}{4}, \frac{1}{2}, \frac{3}{4}, \dots \rightarrow a_n = \frac{2n-1}{4n+2}$$

$$\frac{2n-1}{4n+2} < \frac{1}{2} \xrightarrow{\times 2} \frac{2n-1}{2n+1} < 1 \rightarrow 2n-1 < 2n+1$$

$$a(n) = 1$$

$$a_n = 4, 9, 16, 25, \dots \rightarrow an^2 + bn + c$$

$$-1/8n^2 + Bn \rightarrow -1/8n^2 + B = 4 \rightarrow B = 4 + 1/8n^2 \rightarrow a_n = -1/8n^2 + 4 + 1/8n^2$$

$$rA + \Delta B = r(-1/8n^2) + \Delta(4 + 1/8n^2) = -1/8n^2 + 4 + 1/8n^2 = 4$$

$$a_n = -4, -1, 2, 5, \dots \rightarrow 1n^2 + bn + c \rightarrow n^2 - n - 4$$

$$d = \frac{11-1}{1-0} = \frac{10}{1} = 10 \rightarrow r = r(d) + 1 \rightarrow a_n = 11 + 10(n-1)$$

$$n^2 - n - 4 = 0 \rightarrow (n+2)(n-4) = 0 \rightarrow n = 4$$