

$$f_0 + 1 = f_1 \quad (C)$$

$$a_n = f_n + 1 \quad (C) \quad (1)$$

11A

$$t_{1/2}, t_{1/4}, t_{1/8}, t_{1/16} = \text{half-life, quarter-life, eighth-life, sixteenth-life} \quad (C)$$

$$S_n = \frac{10}{r} \left(\frac{(1-r^{n+1})}{1-r} + r^n \right) = 10 f_0 \quad (C) \quad (2)$$

$$S_f = \frac{f}{r} \left(\frac{(1-r^{n+1})}{1-r} + \frac{(1-r^{n+1})}{1-r} \right) = 19.5$$

$$1 + \sqrt{r}, \quad r, \quad r - \sqrt{r}, \quad \dots$$

$$a_n = a_1 + (n-1)d \quad (3)$$

$$a_n = 1 + \sqrt{r} + (n-1)(1 - \sqrt{r})$$

$$1 + \sqrt{r} + n - 1 - \sqrt{r}n + \sqrt{r}n$$

$$t_{1/2} = 1\sqrt{r} + 1 - 1\sqrt{r} = 1 - 1\sqrt{r}$$

$$t_{1/4} = 1\sqrt{r} + 1 - 1\sqrt{r} = 1 - 1\sqrt{r}$$

$$GMS = \boxed{1\sqrt{r} - 1}$$

$$a_n = a^x, \quad r \cdot a^x, \quad a^x$$

$$r \cdot a^x = \frac{a^x + a^x}{r}$$

$$b_n = x, \quad r, \quad x$$

$$r = \frac{x + x}{r} \Rightarrow x + x = r \quad \text{or} \quad \boxed{x = \frac{r}{2}}$$

$$r \cdot x \cdot a^x = 1 + \frac{r-x}{r} \Rightarrow r - x$$

$$x = \frac{r}{2} \quad \text{or} \quad \boxed{x = \frac{r}{2}}$$

$$x \cdot x = \boxed{r}$$

$$\frac{r - r + r}{r} = r - 1 \rightarrow r + r - r = r - 1$$

$$r = 1 \rightarrow r = 1$$

$$a_n = -r, \quad 0, \quad r, \quad \dots$$

$$\begin{aligned}
 a_n &= \underbrace{r}_{+r}, \underbrace{a}_{+r}, \underbrace{r}_{+r}, \dots \\
 b_n &= \underbrace{r}_{+r}, \underbrace{a}_{+r}, \underbrace{r}_{+r}, \dots
 \end{aligned}
 \left. \begin{array}{l} \text{حساب می شود} \\ \text{میشود} \end{array} \right\} \alpha_n = sn + a \rightarrow 11, 14, \dots, 141 \rightarrow \text{د. 5} \quad \text{110}$$

$$d = r \times r = 5$$

$$a_{r0} = 141 \quad , \quad b_{r0} = 109$$

$$\begin{aligned}
 a_1 + a_r + a_{r^2} &= 141 \rightarrow a_1 + a_1 + d + a_1 + r d = 141 \rightarrow (3a_1 + r d = 141) \\
 a_1 + a_r + a_{r^2} &= 109 \rightarrow a_1 + a_1 + r d + a_1 + r d = 109 \rightarrow (3a_1 + 2r d = 109)
 \end{aligned}$$

$$\begin{aligned}
 a_r - a_1 + a_1 &= d \\
 a_1 + r d - a_1 - d + a_1 &= a_1 + d = 141 \rightarrow \frac{141}{3} = 47 \quad \text{د. 5} \quad a_1 = 141
 \end{aligned}$$

$$\begin{aligned}
 r &= a_1 + a_1 + a_1 \rightarrow 3a_1 + 3d = 141 \rightarrow a_1 = 47 \\
 S_r &= 141 \rightarrow \frac{r}{2} (2a_1 + r d) = 141 \\
 r &= a_1 + a_{r^2} \rightarrow \frac{r}{2} (a_1 + d) = 141 \Rightarrow -3a_1 = -50 \\
 S_r &= 141 \rightarrow \frac{r}{2} (2a_1 + r d) = 141 \Rightarrow \frac{a_1}{2} = 141 \quad \text{د. 5} \quad d = 141 \\
 a_1 + a_{r^2} &= a_1 + r d + a_1 + r d = 141 \\
 141 + 141 d &= 141 \\
 d &= 1
 \end{aligned}$$

$$\begin{aligned}
 S_9 &= \frac{9}{2} (2a_1 + 8d) = 9a_1 + 36d \\
 S_r &= \frac{r}{2} (2a_1 + r d) = r a_1 + \frac{r^2 d}{2} \\
 S_9 &= 9 S_r \Rightarrow 9a_1 + 36d = 9r a_1 + \frac{9r^2 d}{2} \\
 9d &= 141a_1 \\
 a_1 &= \frac{1}{141} d \quad , \quad d = 141a_1
 \end{aligned}$$

$$a_{r0} = a_1 + 141d = 141a_1$$

$$a_v = a_1 + 5d = 141a_1 \Rightarrow \frac{141a_1}{141a_1} = 1 \quad \text{د. 5}$$

Arman

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$$\alpha_1 = 11$$

$$\alpha_1 = 11 \Rightarrow \alpha_1 + 5d = 11$$

$$C_{10} = 11n + 7$$

$$\rightarrow \alpha_1 = 11$$

$$5d = 0 \rightarrow d = 0$$

(10)

$$\alpha_1 = 11$$

$$\alpha_1 = 11 \Rightarrow \alpha_1 + 5d = 11$$

$$C_{10} = -2n + 11$$

$$\rightarrow -2n + 11 = 11$$

$$5d = 0 \rightarrow d = 0$$

$$-2n = 0 \rightarrow n = 0$$

بین جملات اول تا ششم $\frac{1}{5}$ و ششم تا دهم وجود دارد