

$$t_1 = 5, \quad t_r = 4, \quad t_n = 201$$

$$n = 25$$

$$t_r - t_1 = rd \Rightarrow rd = 21 \Rightarrow d = 7$$

$$t_1 = 5 = 7n + 2r$$

$$7n + 2r = 201 \Rightarrow 7n = 175 \Rightarrow n = 25$$

$$\begin{array}{r|l} 175 & 7 \\ \hline 125 & 15 \\ \hline 50 & 7 \\ \hline 0 & \end{array} \quad \begin{array}{l} \checkmark \\ 25 \end{array}$$

$$(2)$$

$$\frac{91}{-91} \frac{17}{17} \Rightarrow 91 + 17 = 108$$

$$\frac{997}{-997} \frac{17}{17} \Rightarrow 997 + 17 = 1014$$

$$(1, 17)$$

$$101 \leq 7n + 2 < 997 \Rightarrow 91 \leq 7n < 995$$

$$13 \leq n < 142$$

$$n = 142 - 13 + 1 = 129$$

$$142 - 13 = 129$$

$$7an + 4d = -4n + 17 \Rightarrow 7a + 4d = -4 \Rightarrow t_n = -4n + 17$$

$$(10)$$

$$t_1 = a_1 + d \Rightarrow a_{n+1} + a_{n+2} + a_{n+3} = a_n + a_{n+1} + a_{n+2} + d + 2d = a_{n+3} + 2d$$

$$a_{17} = (-4 \times 17) + 17 = -65$$

$$a_{12} = (-4 \times 12) + 17 = -35$$

$$a_{12} - a_{17} = -4 \Rightarrow \begin{cases} d = -7 \\ a_1 = 9 \end{cases}$$

$$a_{17} + a_{12} = 17a_1 + 17d = 17(9) + 17(-7) = -35$$

$$t_r = a_1 + rd = 2^{n-1}$$

$$t_n = a_1 + rd = 2^{n+1}$$

$$t_{17} = a_1 + 17d = 2^{17} - 2$$

$$\Rightarrow t_r + t_r = t_n + t_n \Rightarrow 2t_r = 2t_n \Rightarrow t_r = t_n$$

$$S = 17 + 17 + 17 = 51$$

$$(10)$$

$$2^{n-1} + 2^{n-2} = 2^{n+1} \Rightarrow 2^{n-2} + 2^{n-3} = 2^{n+1} \Rightarrow 2^{n-2} + 2^{n-3} = 2^{n+1}$$

$$2^n(2^{n-2} - 2) = 2 \Rightarrow 2^n = 2 \Rightarrow n = 1 \leftarrow 2^n(1 + 2^{n-2} - 2) = 2$$

$$a_{17} - a_{10} = 7d = 0 \Rightarrow d = 0$$

$$a_{17} + a_{10} = 2a_1 + 17d = 20 \Rightarrow 2a_1 = 20 \Rightarrow a_1 = 10$$

$$a_{17} = a_1 + 17d \Rightarrow 10 + 17d = 20 \Rightarrow 17d = 10 \Rightarrow d = \frac{10}{17}$$

$$(2)$$



