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$$a_n = 4, 9, 13, 17, \dots \Rightarrow a_n = 4n + 1 \checkmark$$

(2) (1) - 1

$$a_{10} = 4(10) + 1 = 41 \checkmark$$

(1)

$$a_n = 4, 10, 16, 22, \dots \Rightarrow S_n = \frac{10}{4} (4(4) + (10-1)4) = 110 \checkmark$$

(2) (1) - 1

$$a_1 = 4, a_2 = 10, a_3 = 16, a_4 = 22 \Rightarrow S_{10} = a_1 + a_2 + a_3 + a_4 + \dots + a_{10}$$

$$= \frac{4}{4} (a_1 + a_{10}) = \frac{4}{4} (4 + 41) = 45 \checkmark$$

$$a_{10} - a_1 = 41 - 4 = 37 \checkmark$$

(2) - 1

$$a_n = 1 + \sqrt{2}, 2, 3 - \sqrt{2}, \dots \Rightarrow d = 1 - \sqrt{2} \Rightarrow a_d = 1 - \sqrt{2} = 1(1 - \sqrt{2}) \checkmark$$

$$a_n = d^{10}, 2(d^{10}), d^9 \Rightarrow d^{10}, 2(d^{10}) + d^{10}, 3(d^{10}) + d^{10}, \dots$$

$$\Rightarrow d^{10}, 2(d^{10}) + d^{10} - 1$$

$$\Rightarrow y = 2x + 1$$

- 1

(2)

$$b_n = x, 2, 2x + 1, \dots \Rightarrow x + d = 2x + 1 \Rightarrow d = x + 1$$

$$\Rightarrow x + \frac{x+1}{2} = 1 \Rightarrow 2x + x + 1 = 2 \Rightarrow 3x = 1 \Rightarrow x = \frac{1}{3} \checkmark$$

$$a_n = 1n - 1, 1n - 1, 4n, \dots \Rightarrow 4n = 1n - 1 \Rightarrow 3n = -1 \Rightarrow n = -\frac{1}{3} \checkmark$$

(2) - 1

$$a_1 = 4n + 1 = 4(1) + 1 = 5 \checkmark$$

$$a_n = 2, 4, 6, 8, \dots \quad b_n = 1, 2, 3, 4, \dots \quad \left. \begin{array}{l} a_n \cap b_n = 2, 4, 6, 8, \dots = 4n - 1 \end{array} \right\}$$

(2) - 1

$$\left. \begin{array}{l} a_{10} = 2(10) + 1 = 21 \\ b_{10} = 2(10) - 1 = 19 \end{array} \right\} \Rightarrow 4n - 1 \leq 21 \Rightarrow 4n \leq 22 \Rightarrow n \leq 5.5 \Rightarrow n = 1, 2, 3, 4, 5 \checkmark$$

$$\left. \begin{aligned} a_1 + a_2 + a_3 + \dots + r_1 &\Rightarrow a_2 = v \\ a_1 + a_2 + a_3 + \dots + 10 &\Rightarrow a_2 = r_1 \end{aligned} \right\} \Rightarrow a_1 = r_1 - v - r_1 = -r_1$$

(2) -v

$$\frac{r_1 d - v + (-r_1)}{-r_1} = \frac{v}{-r_1} = \boxed{-\frac{1}{r_1}} \checkmark$$

$$a_1 + a_2 + a_3 + \dots + 10 \Rightarrow a_1 = d$$

$$a_1 + a_2 + \dots + r_1 d \Rightarrow r_1 a_1 + d d + r_1 d \Rightarrow 10 + d d + r_1 d \Rightarrow d d + 10 \Rightarrow \boxed{d = r_1} \quad (2) -1$$

$$a_1 = a_2 + 10d = d + 10(r_1) = \boxed{19} \checkmark$$

$$S_9 = 9 S_r \Rightarrow \frac{9}{r_1} (a_1 + a_9) = 9 \left(\frac{r_1}{r_1} (a_1 + a_9) \right)$$

(2) -9

$$\Rightarrow a_1 + a_9 = r_1 (a_1 + a_9) \Rightarrow r_1 a_1 + 10d = 9a_1 + 9d \Rightarrow d = r_1 a_1$$

$$\Rightarrow \frac{a_9}{a_1} = \frac{a_1 + 19(r_1 a_1)}{a_1 + 9(r_1 a_1)} = \frac{r_1 9 a_1}{r_1 9 a_1} = \boxed{r_1} \checkmark$$

$$a_f = \frac{r_1 d + 11}{r_1} = r_1$$

(2) -10

$$b_f = b_1 + r_1 d = r_1 n + r_1 \left(\frac{1r_1 - r_1 n}{n+1} \right) \Rightarrow \frac{-r_1 d}{n+1} = -10 \Rightarrow n+1 = d \Rightarrow \boxed{n = 9} \checkmark$$