

$$\sqrt{n+1} \rightarrow n f(n) \gg 0$$

$$[-5, 5] \cup [2, 5]$$

✓

$$\begin{array}{ccccccc} & -5 & 0 & 2 & 5 \\ & | & | & | & | \\ & - & + & - & + & - \end{array}$$

1

$$\frac{-n}{f(n)} \gg 0, f(n) \neq 0$$

↓

$$\frac{n}{f(n)} \gg 0$$

✓

$$(-3, 2) - \{0\}$$

$$\begin{array}{ccccccc} & -5 & -2 & 0 & 2 & 5 \\ & | & | & | & | & | \\ & + & - & - & + & - \end{array}$$

2

$$f(-2)$$

$$f(2) - 2f(4) = \frac{4-4}{2+5}$$

$$-f(2) = 2$$

$$f(2) = -2$$

✓

$$f(2) = \frac{4-4}{2+5} = 2+4+5$$

$$f(-2) = 1$$

3

$$f(f(1)) \rightarrow f(1) = 2 \times 1 + 2 = 4 \Rightarrow f(4) = 5 - \sqrt{4+5} = 2$$

$$f(f(4)) \rightarrow f(4) = 5 - \sqrt{4+5} = 2 \Rightarrow f(2) = 2 \times 2 + 2 = 6$$

$$f(f(5)) = 7 + 5 = 9$$

$$f(f(1)) = 2$$

✓

$$f(n+1) - f(n) = (n^2 - (n+1)^2) - (bn + b + 1 - an^2 + bn + 1)$$

$$-2an + a + b = 4n + 1 \Rightarrow$$

$$a + b = 2/5 \Rightarrow 3b = 2 \Rightarrow b = 2/3$$

$$-2a - 2 = -1$$

$$-2a = 1$$

$$a = -1/2$$

✓

5

$$\frac{r(1-r+r^2) + 1+r^2}{(1-r+r^2)^2} = \frac{r+d}{1} = V$$

(P) ✓

6

$$\frac{r(\varepsilon x^r + 1) - r(r)}{r x^r + 1} = \frac{r1}{V}$$

(P) ✓

7

$$\frac{4-4}{4-r} = \frac{0}{\sum} \begin{matrix} r \xrightarrow{f} 1 \xrightarrow{f} 4 \rightarrow f(f(r)) = 4 \\ r \xrightarrow{f} 2 \xrightarrow{f} 4 \rightarrow f(f(r)) = 4 \\ 1 \xrightarrow{f} 4 \rightarrow f(1) = 4 \end{matrix}$$

✓ (P)

8

$$f(n) = \frac{n^r + \varepsilon n - 1}{n^r + \varepsilon n + d} = \frac{(n+1)^r + d}{(n+1)^r + 1} \quad \left\{ \begin{array}{l} f(r) = \frac{r^r + d}{r^r + 1} \\ \frac{(\sqrt{r} - r + r)^r + d}{(\sqrt{r} - r + r)^r + 1} = \frac{r+d}{r+1} = \frac{1}{\varepsilon} = r \end{array} \right.$$

$$\left(\frac{r1}{1V} \right)$$

9

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

$$\left(\left(\sqrt{n} + \frac{1}{\sqrt{n}} \right)^r - r \right) - \left(n^r + \frac{1}{n^r} \right) - r$$

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

(P) ✓

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