

۱۸/۲۵

کلاس: ۲۰۲۰

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نام و نام خانوادگی: ...

سوال ۱: $x f(x) > 0 \rightarrow x > 0, f(x) > 0$ و $x < 0, f(x) < 0$

① بازه $[0, 2] \leftarrow f(x) > 0$ و $x f(x) = 0 \leftarrow x = 2$
 $D_f = [2, \infty)$ $f(x) < 0 \leftarrow [2, \infty)$

② بازه $[-5, 0] \leftarrow f(x) < 0$ و $x f(x) = 0 \leftarrow x = -5$
 $D_f = [-5, 0)$ $f(x) > 0 \leftarrow [-5, 0)$

$\Rightarrow D_f = [-5, 0) \cup [2, \infty)$

سوال ۲: $y = \sqrt{\frac{-x}{f(x)}} \rightarrow \frac{-x}{f(x)} > 0 \rightarrow$ ① $-x > 0, f(x) > 0$ و ② $-x < 0, f(x) < 0$ و $f(x) \neq 0$
 $\Rightarrow x \neq -3, 0, 2, 5$

$[-4, -3) \rightarrow f(x) < 0$ / $(-3, 0) \rightarrow f(x) > 0$ / $(0, 2) \rightarrow f(x) < 0$ / $(2, 5) \rightarrow f(x) < 0$

③ $-x > 0, f(x) > 0 \rightarrow (-3, 0)$
 $-x < 0, f(x) < 0 \rightarrow (0, 2)$
 $D_f = (-3, 0) \cup (0, 2) \rightarrow (-2, 1)$

سوال ۳: ۵, ۲۵

$f(x) - 2f(x) = f - 1x + f$
 $-f(x) = -f \rightarrow f(x) = f \rightarrow f(x) - 1 = x^2 - 3x + f$
 $f(-1) - 1 = 1 + 9 + f$
 $f(1) = 1 + 9 + f + 1 \Rightarrow f(1) = 11$

$$f(1) \rightarrow r_n + r \Rightarrow r + r = d \rightarrow f(d) = n - \sqrt{n+r} = r$$

(9) 14 ch

$$f(d) = r \rightarrow f(r) \rightarrow r_n + r = v \Rightarrow v + r = 9$$

$$f(n) = an^r - bn + r$$

(10) ch

$$f(n-1) - f(n) = 9n + r \rightarrow f(n-1) = a(n-1)^r - b(n-1) + r$$

$$f(n-1) = an^r - ran + a - bn + b + r$$

(9)

$$f(n-1) - f(n) = (an^r - ran + a - bn + b + r) - (an^r - bn + r) = -ran + a + b$$

$$-ran + a + b = 9n + r \rightarrow \underline{-ra} = 9n \rightarrow -ra = 9 \rightarrow a = -r, b = d$$

$$\Rightarrow a - b = -r - (+d) = -1$$

$$f(n) = (\sqrt{r} - r)^r + r(\sqrt{r} - r) + d \rightarrow (\sqrt{r} - r)^r + r(\sqrt{r} - r) = y$$

(9) 14 ch

$$\Rightarrow y = (r - \sqrt{r} + r) + r\sqrt{r} - 1 \Rightarrow y = -1 \rightarrow f(n) = \frac{-1+d}{-1+v} = \frac{r}{9} = \frac{r}{r}$$

$$\frac{n^{r+1}}{n^r} = \frac{n^r}{n^r} + \frac{1}{n^r} \Rightarrow n^r + \frac{1}{n^r}$$

(9) 14 ch

$$\left. \begin{aligned} n^r + \frac{1}{n^r} &= (n - \frac{1}{n})^r + r \\ (n - \frac{1}{n})^r &= n^r - r + \frac{1}{n^r} \end{aligned} \right\}$$

$$f(n - \frac{1}{n}) = (n - \frac{1}{n})^r + r \rightarrow f(n) = (n^r + r) \rightarrow f(-r) = (-r)^r + r = 11$$

سوال ۱۱ الف $\frac{f}{g} \rightarrow D_f = \{2, 1, 0, 1, 0\}$ $D_g = 9 - x^2$
 $9 - x^2 \rightarrow -3 \leq x \leq 3 \rightarrow [-3, 3]$ و $0 \notin D_g$

$$\{2, 1, 0, 1, 0\} \cap [-3, 3] = \{2, 1, 0\}$$

$$\frac{f}{g}(1) = \frac{-4}{2\sqrt{2}} = -\frac{\sqrt{2}}{1} \quad \frac{f}{g}(0) = \frac{1}{3} \quad \frac{f}{g}(2) = \frac{0}{\sqrt{5}} = 0$$

$$\frac{f}{g} = \left\{ (2, 0), \left(0, \frac{1}{3}\right), (1, -\sqrt{2}) \right\}$$

سوال ۱۵ ب $f(x) \neq 0 \rightarrow f(2) = 0$ حذف $\frac{g}{f}(1) = \frac{\sqrt{2}}{-2}$ $\frac{g}{f}(0) = \frac{3}{2}$

$$\frac{g}{f} = \left\{ \left(1, -\frac{\sqrt{2}}{2}\right), \left(0, \frac{3}{2}\right) \right\}$$

سوال ۹ الف $2f(x) = \{(2, 2), (3, 1), (-5, 4), (1, -4)\}$

ب $f(x) + 1 = \{(2, 2), (3, 5), (-5, 3), (1, -1)\}$

ج $3f^2(x) + 1 = \{(2, 4), (3, 9), (-5, 13), (1, 13)\}$

د $f(2x) = \left\{ \left(1, 1\right), \left(\frac{3}{2}, 4\right), \left(-\frac{5}{2}, 2\right), \left(\frac{1}{2}, -2\right) \right\}$

سوال ۱۰ الف $f - g = \{(2, 2), (1, 4), (3, 2)\}$

ب $\frac{2f}{g} \rightarrow 2f = \{(2, 4), (1, 4), (1, 1), (3, 2), (5, 4)\}$

$$\frac{2f}{g} = \{(2, 4), \text{توصیف نشده}, (3, -2)\}$$