

SUBJECT:

DATA:

NUMBER:

14/10

میان ریاضی

1) $D \cdot \text{god}(M) = \{ u \in D_f, f(u) \in D_g \}$ $D_g \rightarrow \dots \rightarrow \frac{r}{-b} = \frac{r}{r}$ (1)

1) $x-1 > 0 \rightarrow x > 1, \log_r^{u-1} > 2 \rightarrow u-1 > 1 \rightarrow u > 2$
 5 } 1) و 2) $\rightarrow D_{\log} = \{1, 2\}$
 2) $\sqrt{\log_r^{u-1}} = 2 \rightarrow \log_r^{u-1} = 4 \rightarrow u-1 = 14 \rightarrow u = 15$ (2) ✓

$f \circ g(u) = g \circ f(u) \rightarrow r u^r - 4u + 14 - a = r u^r - 4u + 2a - 4u + 14 + a$ (2)

10 $r u^r - 4u + 2a = 0 \rightarrow u = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{4 \pm \sqrt{16 - 4r \cdot 2a}}{2r}$ (2) ✓
 $\frac{(1+\sqrt{2r})^r}{r} + \frac{(1-\sqrt{2r})^r}{r} = \frac{1 + 2r + 2\sqrt{2r} + 1 - 2r - 2\sqrt{2r}}{r} = \frac{2}{r} = \frac{2}{r}$ ✓

15 $g(u) = \dots \rightarrow g(r, u) = a u^r + 11$ $r u^r \rightarrow u = \frac{t}{r} \rightarrow a \frac{t^r}{r} + 11 \rightarrow g(u) = \frac{a t^r}{r} + 11$ (2)

$g(u-v) = \frac{a \times (u-v)^r}{r} + 11 = \frac{a u^r - 4u + 2a}{r} + 11 = \frac{a u^r - 4u + 2a}{r}$

$\text{Min} = \frac{-b}{2a} = \frac{4}{2r} = \frac{2}{r} = \frac{2}{r} + 11 = \frac{2}{r} + 11$ (2) ✓

20 $r g - r = r u^r - 4u - 1 \rightarrow r g = r u^r - 4u + r \rightarrow g = u^r - 4u + 1 = (u-1)^r$ (2)

$\text{god}(u) = (r u - r - 1)^r = (r u - a)^r = r u^r - 4u + 2a$ (2) ✓

25

SHAHAB

NUMBER:

$$x f(x) - y g(y) = 15$$

5

$$\log(n) \leq \log(n) \rightarrow 9^{\log n} \leq \log n \rightarrow 2^{\log n} \leq 2^{\log n} - 4$$

$$u^r \leftarrow u^r \cdot a \rightarrow u^r - u^r \cdot a \rightarrow \frac{u^r}{+ \phi - \phi +} \rightarrow \frac{u^r}{\phi \phi \phi} \rightarrow \frac{u^r}{\phi \phi \phi} \rightarrow \frac{u^r}{\phi \phi \phi}$$

10 $f\left(u - \frac{r}{n}\right) = \underbrace{ur + \frac{r}{n^2} + u - \frac{r}{n}}_{ur + \frac{r}{n^2} - \frac{r}{n} + \frac{r}{n} = ur + \frac{r}{n^2}}$ $\xrightarrow{u - \frac{r}{n} = t} f(t) = t^r + t$ ✓
 $f(u) = ur + \frac{r}{n}$ ✓

$$D_{f \circ g} = \{ n \in D_g, g(n) \in D_f \}$$

15

$R_g \rightarrow m, \frac{-b}{2a} = \frac{-1}{-1} = 1 \rightarrow y_5 = 14 \rightarrow R_g = (-\infty, 14] \rightarrow R_g = D_f$

$D_f = (2, 14] \rightarrow R_{f \circ g} = (-\infty, 1] \quad (0, 1) \cap (-\infty, 1] \rightarrow (0, 1]$

20 $f(\underbrace{f(m)}_t) = 1 - \sqrt[n]{f(m)} \longrightarrow f(t) = 1 - \sqrt[n]{t} \longrightarrow f(m) = 1 - \sqrt[n]{m} = 1$ — 9

$$h(g(n)) = f(n) \rightarrow (n-1) + r(n-1) + 1 = n - r + 1$$

25 $x^2 - 3x + 2 = -3x^2 \rightarrow x^2 + 6x - 2 = 0 \rightarrow x = -3 \pm \sqrt{11}$

25

SHAHAB

DATA:

NUMBER:

$$f(n) = n - \frac{f}{n}, g \circ f(n) = an^2 + 2n, g(c) = 1$$

$$g(c) = 1 \rightarrow f(n) = c \rightarrow n - \frac{f}{n} = \frac{n^2 - f}{n} = c \rightarrow n^2 - 2n - c = 0$$

$$(n+1)(n-c) = 0 \rightarrow n = -1, c$$

5

$$g(f(-1)) = g(c) = a(-1)^2 + 2(-1) = a - 2 = 1 \rightarrow a = 3$$

گفتا (f تابعی خطی نیست) $g(f(c)) = g(c) \rightarrow 4ac + 2 = 1 \rightarrow ac = -\frac{1}{2}$ $\checkmark$ $\times$

گفتا $g \circ f$ هم فنی نیست $\rightarrow$ if $ac = -\frac{1}{2}$ $g \circ f$ فنی نیست

10 $n = 1, 0, 0, 0 \rightarrow n = 0 \checkmark \rightarrow a = 10$