

۲۰ آزمون

دپ $y = \sqrt{x f(x)}$ ۲ $y = f(x)$ (۲) ✓	$x f(x) \geq 0$ $x = -2, 0, 2$ <table style="margin-left: auto; margin-right: auto;"> <tr> <td>-2</td> <td>0</td> <td>2</td> <td>0</td> </tr> <tr> <td>-</td> <td>+</td> <td>-</td> <td>+</td> </tr> </table> عده‌ی مرتب شده: $-2, 0, 2$ $D_f = [-2, 0] \cup [0, 2]$ ۱	-2	0	2	0	-	+	-	+
-2	0	2	0						
-	+	-	+						
دپ $y = \sqrt{\frac{-x}{f(x)}}$ ۲ (۲) ✓	$\frac{-x}{f(x)} \geq 0$ $x = -2, 0, 2$ <table style="margin-left: auto; margin-right: auto;"> <tr> <td>-2</td> <td>0</td> <td>2</td> <td>0</td> </tr> <tr> <td>-</td> <td>+</td> <td>-</td> <td>+</td> </tr> </table> عده‌ی مرتب شده: $-2, 0, 2$ $D_f = (-2, 0) \cup (0, 2)$ ۲	-2	0	2	0	-	+	-	+
-2	0	2	0						
-	+	-	+						
$f(x) - 2f(2) = x^2 - 2x + 2$ $f(-2) = 0$ (۲) ✓	$x = 2 \rightarrow f(x) - 2f(2) = 4 - 4 + 2$ $f(2) = 0$ $x = -2 \rightarrow f(-2) - 2f(2) = 4 - 4 + 2$ $f(-2) = 0$ ۳								
$f(x) = \begin{cases} x - \sqrt{x+4} & x > 3 \text{ (1)} \\ 2x+3 & x \leq 3 \text{ (2)} \end{cases}$ $f(f(0)) + f(f(1))$ (۲) ✓	$f(0) = 0 - \sqrt{4} = -2 \rightarrow f(-2)$ $f(1) = 2 + 3 = 5 \rightarrow f(5)$ $f(2) = 4 + 3 = 7 \rightarrow 7 + 2 = 9$ ۴								
$f(x) = ax^2 - bx + 2 \rightarrow$ تابع f ۲ $f(x-1) - f(x) = 4x + 2 \rightarrow PP = 1R$ $a - b = 2$ (۲) ✓	$f(x-1) \rightarrow a(x-1)^2 - b(x-1) + 2$ $= ax^2 - 2ax + a - bx + b + 2$ $\rightarrow f(x) = ax^2 - bx + 2$ $-2a + a + b = 4x + 2$ $a = -2 \rightarrow a + b = 2$ ۵								

$f(n) = n^r - r n + 1$ $\frac{r f(r) + f(r-1)}{f(r)}$ (2) ✓	جواب $f(r) \rightarrow 9 - 9 + 1 = 1$ $f(r-1) \rightarrow 1 + 3 + 1 = 5$ $f(r) \rightarrow r - r + 1 = (-1)^r = 1$ $\frac{r + 0}{1} = 1$ 6
$f(n) = \begin{cases} r n + 1 & n \geq r \\ n^r & n < r \end{cases}$ $\frac{r f(r) - r f(r-1)}{f(r)} = ?$ (2) ✓	جواب $f(r) \rightarrow 1r + 1 = 1r$ $f(r-1) \rightarrow (-1)^r = 1$ $f(r) \rightarrow r + 1 = 1$ $\frac{r \times 1r - 1}{r} = \frac{r^2 - 1}{r}$ 7
$f = \{(r, 1), (r, 2), (r, 3), (1, r)\}$ $\frac{f(f(r)) - f(f(r))}{f(1) - r}$ (2) ✓	جواب $f(r) \rightarrow 1$ $f(1) \rightarrow 6$ $\frac{r - 6}{r - 1} \rightarrow \frac{0}{5}$ $f(r) \rightarrow r$ $f(r) \rightarrow 6$ $f(1) \rightarrow 4$ 8
$f(n) = \frac{n^r + r n + 9}{n^r + r n + 0}$ $f(P(\sqrt{r-1})) = ?$ (2) ✓	جواب $\frac{n^r + r n + 9}{n^r + r n + 0} = \frac{(n+r)^r + 0}{(n+r)^r + 1}$ $f(r) = \frac{r^r + 1 + 9}{r^r + 1 + 0}$ $n = \sqrt{r-1}$ $\frac{r+0}{r+1} = \frac{1}{r} = 1$ 9
$f(n) = n^r + \frac{1}{n^r}$ $(f(\sqrt{n}))^r - f(n) = ?$ (2) ✓	جواب $f(\sqrt{n}) = n + \frac{1}{n} \rightarrow (n + \frac{1}{n})^r = n^r + r n^{r-1} (\frac{1}{n}) + \frac{1}{n^r}$ $= n^r + r + \frac{1}{n^r} - f(n) = 2$ 10