

نام و نام خانوادگی: المینا شمشیر پاسخنامه تشریحی تکلیف شماره ۷... کلاس ۳... (۱۰۰٪)

۲. فرض کنید f تابعی باشد از مجموعه اعداد صحیح به مجموعه اعداد صحیح.

$y = f(x)$ $y = f(m) = 2$ و $f(n) = 0$ $f(m) = 0$ و $m = -5$ و $n = 2$ $f(m) < 0$ و $-5 < 2$ $f(m) > 0$ و $2 < 5$	$m = -5$ $n = 2$ $m \neq n$ دامنه $[-5, 5]$ $D_f = [-5, 0] \cup [2, 5]$	<table border="1"> <thead> <tr> <th>x</th><th>$f(x)$</th><th>x</th><th></th></tr> </thead> <tbody> <tr> <td>-</td><td>+</td><td>-</td><td>$[-5, -2]$</td></tr> <tr> <td>+</td><td>-</td><td>-</td><td>$[-2, 0]$</td></tr> <tr> <td>-</td><td>-</td><td>+</td><td>$(0, 2)$</td></tr> <tr> <td>+</td><td>+</td><td>+</td><td>$[2, 5]$</td></tr> </tbody> </table>	x	$f(x)$	x		-	+	-	$[-5, -2]$	+	-	-	$[-2, 0]$	-	-	+	$(0, 2)$	+	+	+	$[2, 5]$	۱
x	$f(x)$	x																					
-	+	-	$[-5, -2]$																				
+	-	-	$[-2, 0]$																				
-	-	+	$(0, 2)$																				
+	+	+	$[2, 5]$																				

$y = \sqrt{\frac{-m}{Am}}$ $f(m) < 0 \leftarrow -2 < -1 \rightarrow -$ $f(m) > 0 \leftarrow -1 < -2 \rightarrow +$ $f(m) < 0 \leftarrow 2 < 0 \rightarrow -$ $f(m) > 0 \leftarrow 0 < 2 \rightarrow +$	$\frac{-m}{f(m)} \geq 0$ $f(m) \neq 0$ $m = -2, m = 0, m = 2$ $f(-2) = 0, f(0) = 0, f(2) = 0$ if $m < 0$ or if $m > 0$ $-m > 0$ $-m < 0$ $m < 0 \rightarrow +$ $m > 0 \rightarrow -$ $D_f = (-2, 0) \cup (0, 2)$	$(-2, -3) \times \frac{+}{+} = -$ $(-3, 0) \checkmark \frac{+}{+} = +$ $(0, 2) \checkmark \frac{-}{-} = +$ $(2, 0) \rightarrow \frac{-}{+} = -$	۲
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$f(m) - 2f(2) = m^2 - 4m + 2$ $f(-2) \Rightarrow$ $f(-2) - 2f(2) = 2 + 4 + 2 = 8$ $f(2) = 10$	$f(2) - 2f(2) = 2 - 4 + 2 = 0$ $-f(2) = 2$ $f(2) = -2$		۳
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$f(m) = \begin{cases} m - \sqrt{m+2} & m > 2 \\ 2m + 3 & m \leq 2 \end{cases}$ $f(f(0)) + f(f(1)) = ?$ $7 + 2 = 9$	① $0 > 2$ $f(0) = 0 - \sqrt{0+2} = -\sqrt{2} \Rightarrow f(f(0)) = f(-\sqrt{2})$ ② $2(2) + 3 = 7 \Rightarrow f(f(2)) = 7$ ③ $1 \leq 2$ $f(1) = 2(1) + 3 = 5 \Rightarrow f(f(1)) = f(5) \xrightarrow{\text{نوع ۲}} 5$		۴
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$f(m) = am^2 - bm + 2$ $f(m-1) - f(m) = 4m + 2$ $a - b = 7 \rightarrow -2 - a = -7$ $-2a = 4 \Rightarrow a = -2$ $-2 + b = 2 \Rightarrow b = 4$	$f(m-1) = a(m-1)^2 - b(m-1) + 2$ $a(m^2 - 2m + 1) - b(m-1) + 2 \rightarrow am^2 - 2am + a - bm + b + 2$ $f(m-1) - f(m) \rightarrow (am^2 - 2am + a - bm + b + 2) - (am^2 - bm + 2)$ $\Rightarrow am^2 - 2am + a - bm + b + 2 - am^2 + bm - 2 = -2am + a + b$ $-2am + a + b = 4m + 2$ $-2a = 4 \Rightarrow a = -2$ $a + b = 2 \Rightarrow -2 + b = 2 \Rightarrow b = 4$		۵
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$f(n) = n^r - r n + 1$ $\frac{r f(r) + f(-1)}{f'(r)} \Rightarrow ?$	$f(r) = r^r - r(r) + 1$ $r - r + 1 = 1$ $f(-1) = (-1)^r - r(-1) + 1$ $1 + r + 1 = 2$ $\Rightarrow \frac{V}{1} = V$	$r f(r) - f(-1) = r^r - 1 + 0$ $\text{Case} = V$ $\rightarrow f(r) [f(-r)]^r$ $\hookrightarrow f^r(-r) = (-1)^r = 1$	6
$f(m) = \begin{cases} m^{r+1} & m \geq r \\ m^r & m < r \end{cases}$ $\frac{r f(r) + f(-1)}{f'(r)} = \frac{r^r + r(-1)}{r} = \frac{r^r - r}{r} = \frac{r^r}{r} - 1 = r^{r-1} - 1$	$f(r) = r(r) + 1 = r^2$ $f(-r) = (-r)^r = 2$ $f(r) = r(r) + 1 = r^2$		7
$L = \{(r, 4), (r, r), (2, 1), (1, 4)\}$ $\frac{f(f(r)) - f(f(r))}{f(r) - r} = \frac{0}{2} = 0$			8
$f(m) = \frac{m^r + 2m + 9}{m^r + 2m + 3}$ $f(f(\sqrt{r} - r)) = ?$ $m^r + 2m + 9 = (m^r + 2m + 3) + 2$ $f(m) = 1 + \frac{2}{m^r + 2m + 3}$	$m^r + 2m + 3 = (\sqrt{r} - r)^r + 2(\sqrt{r} - r) + 3$ $\rightarrow (V - 2\sqrt{r}) + (2\sqrt{r} - 1) + 3 = 2$ $f(\sqrt{r} - r) = \frac{2 + 2}{2} = 2$ $f(r) = \frac{r^r + 2(r) + 9}{r^r + 2(r) + 3} = \frac{r^r + 2r + 9}{r^r + 2r + 3}$		9
$f(m) = m^r + \frac{1}{m^r}$ $(f(\sqrt{m}))^r = f(m) = ?$ $f(m) = m^r + \frac{1}{m^r}$	$f(\sqrt{m}) = (\sqrt{m})^r + \frac{1}{(\sqrt{m})^r}$ $(f(\sqrt{m}))^r = (m + \frac{1}{m})^r$ $m^r + r \cdot \frac{1}{m} + \frac{1}{m^r} \rightarrow m^r + r + \frac{1}{m^r}$ $(m^r + r + \frac{1}{m^r}) - (m^r + \frac{1}{m^r}) = r$	$f(\sqrt{m}) = m + \frac{1}{m}$	10