

۱۸, ۲۵

نام و نام خانوادگی: (اسلامی) پاسخنامه تشریحی تکلیف شماره ۲۷ کلاس
 نام و نام خانوادگی: (اسلامی) پاسخنامه تشریحی تکلیف شماره ۲۷ کلاس

۱) $2(3x - y = 9) \rightarrow 6x - 2y = 18$
 $x + 2y = -4 \rightarrow x + 2y = -4$

$$\frac{6x - 2y = 18}{x + 2y = -4} \rightarrow \frac{6x - 2y = 18}{x + 2y = -4} \rightarrow \frac{x}{y} = \frac{1}{-10}$$

۲) $\frac{1}{x} - \frac{1}{y} = -1 \rightarrow \frac{y-x}{xy} = -1 \rightarrow y-x = -xy \rightarrow xy = x-y$
 $\frac{x}{y} - \frac{y}{x} = -10 \rightarrow \frac{xy - y^2}{xy} = -10 \rightarrow xy - y^2 = -10xy \rightarrow xy = \frac{xy - y^2}{-10}$
 $\frac{xy - y^2}{xy} = -1 \rightarrow xy - y^2 = -xy \rightarrow xy = \frac{xy - y^2}{-10}$
 $10xy = xy - y^2 \rightarrow 9xy = -y^2 \rightarrow y = -\frac{1}{9}x$
 $10(-\frac{1}{9}x) = x - (-\frac{1}{9}x) \rightarrow -\frac{10}{9}x = x + \frac{1}{9}x \rightarrow -\frac{10}{9}x = \frac{10}{9}x \rightarrow x = 0$
 $y = -\frac{1}{9}(0) = 0$

۳) $E(a) + P(F(p)) = P(F(c)) \quad a + 1 = -2$
 $P(a) + P(b) = P(a+1) \quad [a = -10]$
 $P(a) + P(b) = P(a) + P(1)$
 $-4 + P(b) = -4 \rightarrow P(b) = 0 \rightarrow [b = 0]$

۴) $m^2 - 4m = -2 \rightarrow m^2 - 4m + 2 = 0 \rightarrow (m-1)(m-2) = 0$
 $m = 1 \rightarrow (-1, -2) (3, 5) (-1, -2) (0, 4) (2, 4) (3, 5) \checkmark$
 $m = 2 \rightarrow (-1, -2) (3, 5) (-1, -2) (3, 4)$
 (Note: A red circle contains '1, 2, 5' and a red arrow points to the solutions.)

۵) الف $\rightarrow x$ هزاران تومان در روز
 ب $\rightarrow \checkmark$
 ج $\rightarrow x$ هزار تومان در روز
 د $\rightarrow \checkmark$

۶) الف $y = -\sqrt{x+1}$
 ب $x = \frac{y}{\sqrt{1-y^2}} \rightarrow x = 1 \rightarrow 1 = \frac{y}{\sqrt{1-y^2}} \rightarrow y = \sqrt{1-y^2}$
 $y^2 = 1 - y^2 \rightarrow 2y^2 = 1 \rightarrow y^2 = \frac{1}{2} \rightarrow y = \pm \frac{1}{\sqrt{2}} \rightarrow x$
 $x = \frac{y_1}{\sqrt{1-y_1^2}} \quad x = \frac{y_2}{\sqrt{1-y_2^2}} \quad \frac{y_1}{\sqrt{1-y_1^2}} = \frac{y_2}{\sqrt{1-y_2^2}}$

۷) $\frac{y_1}{1-y_1^2} = \frac{y_2}{1-y_2^2}$
 $y_1^2 - y_1^4 = y_2^2 - y_2^4$
 $y_1^2 - y_2^2 = y_1^4 - y_2^4$
 $(y_1 - y_2)(y_1 + y_2) = (y_1^2 - y_2^2)(y_1^2 + y_2^2)$
 $(y_1 - y_2)(y_1 + y_2) = (y_1 - y_2)(y_1 + y_2)(y_1^2 + y_2^2)$
 $1 = y_1^2 + y_2^2 \rightarrow y_1 = y_2 \rightarrow y_1 = y_2$

د) $|y| = x^p \rightarrow y = \pm x^p \rightarrow x$



ج) $y^p + py^p + py + x^p + x = 0$

$(y+1)^p = y^p + 1 + py^p + py \Rightarrow (y+1)^p - 1 + x^p + x = 0 \rightarrow (y+1)^p = -x^p - x + 1$
 $y+1 = \sqrt[p]{-x^p - x + 1}$
 $y = \sqrt[p]{-x^p - x + 1} - 1 \rightarrow \checkmark$

6

$f(x) = \frac{x^p + px + a}{x^p + px + v}$

$f(\sqrt[p]{p-1}) = \frac{(p-1)^p + p(\sqrt[p]{p-1}) + a}{(p-1)^p + p(\sqrt[p]{p-1}) + v} = \frac{p + p - p\sqrt[p]{p} + p\sqrt[p]{p} - 1 + a}{p + p - p\sqrt[p]{p} + p\sqrt[p]{p} - 1 + v} = \frac{p}{p-1}$



7

$f(x) = x^p + ax + b$

$y = px - a$

$\left. \begin{matrix} (-1, -1) \\ (-1, -1) \end{matrix} \right\} \rightarrow \begin{matrix} -F = -1 - a + b \rightarrow [b = -1] \\ -F = -p - a \rightarrow -1 = -a \rightarrow [a = 1] \end{matrix}$

$f(x) = x^p + x - p$

$y = px - 1$

$\left. \begin{matrix} x^p + x - p = px - 1 \\ x^p - px - 1 = 0 \rightarrow (x+1)(x^p - x - 1) \end{matrix} \right\} \rightarrow$
 $\Delta = b^2 - 4ac = 1 + p = a$
 $x = \frac{1 \pm \sqrt{a}}{p} \rightarrow \frac{1 + \sqrt{a}}{p} + \frac{1 - \sqrt{a}}{p} = \frac{2}{p} = [1]$



8

$a + b = pa \rightarrow [a = b]$

$a + b = pa = a - pa + 1$

$pa = -a + 1 \rightarrow pa = 1 \rightarrow [a = \frac{1}{p}] \quad [b = \frac{1}{p}]$



9

$(\text{Slog}) \rightarrow f(x) = x \rightarrow \frac{fx^p - ax + c + 1}{bx + p} = \frac{x}{1} \rightarrow fx^p - ax + c + 1 = x(bx + p)$

$fx^p - ax + c + 1 = bx^p + px + c$

$\left. \begin{matrix} [b = f] \\ [a = -p] \\ [c = -1] \end{matrix} \right\} \rightarrow a + b + c = -p + f - 1 = [0]$



10