

الف) $P_1: \{(2, 2), (n, 5), (2, n^2 - n), (m, 2), (-1, 4)\}$
 $\xrightarrow{\text{ع.۲}} y_1, y_2 \Rightarrow x_1, x_2 \rightarrow m, 2 / n^2 - n, 2 < n^2 - 2$ تبدیل نیست
 ب) $P_1: \{(-1, 4), (1, 2), (2, 3), (a, m-1), (a+2, n), (m, 2)\}$
 $\xrightarrow{\text{ع.۲}} m, 2 / a, 2 - 1 / n, 2$ تبدیل نیست

$P(a): \begin{cases} 2a-1; a \geq 1 \rightarrow a \geq 1 \rightarrow 2a-1 \geq 2 \\ a+a; a < 1 \rightarrow a < 1 \rightarrow a+a < 1+a \end{cases}$
 $\xrightarrow{\text{تبدیل}} 1+a \leq 2 \Rightarrow a \leq 2-1 \Rightarrow \boxed{a \leq 1}$ ۲

$P(a): \begin{cases} 2a-1; a \geq 1 \rightarrow 2a-1 \geq 2 \\ a+a-1; a \leq 0 \rightarrow \begin{matrix} a > 0 & a+a-1 \leq a-1 \\ a < 0 & a+a-1 \geq a+1 \end{matrix} \end{cases}$
 $\xrightarrow{\text{ع.۲}} a-1 < 2, a < 2$ ۳

الف) $y_1 = x_1^2 + 2, y_2 = x_2^2 + 2 \xrightarrow{y_1 = y_2} x_1^2 + 2 = x_2^2 + 2 \Rightarrow x_1^2 = x_2^2 \Rightarrow x_1 = x_2$
 $y_2 = x_2^2 + 2 \Rightarrow x_2 = \sqrt{y_2 - 2}$
 ب) $y = x^2 - 4x + 2$

 تبدیلی نیست
 دایره پذیر نیست ۴

الف) $y = \sqrt{x-3}$
 $\Rightarrow x^2 + 3 = y; x \geq 0$
 ب) $y = x^2 - 4x + 2 \Rightarrow (x-2)^2 - 1; x \in [2, +\infty)$

 $\rightarrow$ تبدیلی است $\rightarrow$ دایره $x = (y+1)^2 - 1 \rightarrow y = \pm\sqrt{x+1} + 2$
 $\rightarrow \sqrt{x+1} + 2 = y$
 جواب دایره ۵

الف) $y, \frac{2x+1}{x-2} = \frac{2y+1}{y-2} \Rightarrow$ تبدیل به $y, \frac{2x+1}{x-2} = \frac{2y+1}{y-2}$ $\Rightarrow x = 2, y = 2 \Rightarrow \frac{2x+1}{x-2} = \frac{2y+1}{y-2}$ ب) $\frac{2x+1}{x+2} = 2 \Rightarrow$ تبدیل نیست $\frac{2x+1}{x+2}$	
$f(x) = x + \sqrt{x} = \left(\sqrt{x} + \frac{1}{\sqrt{x}}\right)^2 - \frac{1}{x} \xrightarrow{\text{دال}} \left(\sqrt{y} + \frac{1}{\sqrt{y}}\right)^2 - \frac{1}{y} = x$ $\Rightarrow \pm \sqrt{x + \frac{1}{x}} - \frac{1}{\sqrt{x}} = \sqrt{y} \rightarrow \sqrt{x + \frac{1}{x}} - \frac{1}{\sqrt{x}} = \sqrt{y}$ $\rightarrow x + \frac{1}{x} + \frac{1}{x} - \sqrt{x + \frac{1}{x}} = y \Rightarrow x + \frac{1}{x} - \sqrt{x + \frac{1}{x}} = y$ $\rightarrow a = 1, b = \frac{1}{x}, c = -\frac{1}{x} \Rightarrow a + b + c = 1 + 1 - 2 = 0$	y
$y_1 = \frac{x_1}{\sqrt{x_1^2 - 2}}, y_2 = \frac{x_2}{\sqrt{x_2^2 - 2}} \rightarrow y_1 y_2 = \frac{x_1}{\sqrt{x_1^2 - 2}} \cdot \frac{x_2}{\sqrt{x_2^2 - 2}}$ $\rightarrow \frac{x_1^2}{x_1^2 - 2} = \frac{x_2^2}{x_2^2 - 2} \Rightarrow x_1^2 x_2^2 - 2x_1^2 = x_2^2 x_1^2 - 2x_2^2$ $\Rightarrow x_1^2 = x_2^2 \Rightarrow x_1 = \pm x_2 \Rightarrow$ باز به $x_1 = x_2$ $\Rightarrow \text{و ب} = x^2 = \frac{2y^2}{x^2 - 1} \Rightarrow y^2 = \frac{2x^2}{x^2 - 1} \rightarrow y = \frac{\sqrt{2}x}{\sqrt{x^2 - 1}}$	A
$d(x) = \sqrt{x-1} \xrightarrow{x-1} y^{-1} \left(-\frac{r}{a}\right) = a \rightarrow d(a) = -\frac{r}{a}$ $\rightarrow a - 1 = -\frac{r}{a} \Rightarrow a = \frac{q}{r} \rightarrow d^{-1}\left(-\frac{r}{a}\right) = \frac{q}{r} \rightarrow f\left(-\frac{r}{a}\right) + d\left(-\frac{r}{a}\right) = \frac{2r}{\sqrt{a}q}$ $f^{-1}(a) = \frac{a}{1+ a } \rightarrow \frac{a}{1+ a } ; a \geq 0$ $\frac{a}{1-a} ; a < 0$ $f^{-1}(a) = -\frac{r}{a} < a = -\frac{r}{a} \vee$ $\rightarrow f\left(-\frac{r}{a}\right) = -\frac{r}{a}$	
$f^{-1}(x) = \sqrt[3]{x-1}$ $g(x) = f(x) + \sqrt{f(x)} \rightarrow g^{-1}(12) = a \rightarrow g(a) = 12$ $\Rightarrow g(a) = f(a) + \sqrt{f(a)} - 12 = 0 \Rightarrow (\sqrt{f(a)} - f)(\sqrt{f(a)} + 3) = 0$ $\Rightarrow f(a) = 9$ $\Rightarrow f^{-1}(9) = a \Rightarrow \sqrt[3]{9-1} = a = 2$	1.