

الف) $x \neq 0$ $\Rightarrow$ $\frac{(x-1)^2 - x^2}{x(x-1)} = \frac{(x-1-x)(x-1+x)}{x(x-1)} = \frac{(-1)(2x-1)}{x(x-1)} = \frac{1}{x}$ صورت $\Rightarrow -1, 0$ $\Rightarrow$ $\frac{1}{x-1} + \frac{1}{x+2} \neq 0 \Rightarrow \frac{x^2 + 4 + x - 1}{(x-1)(x+2)} \neq 0 \Rightarrow x \neq -\frac{5}{2}$ مخرج $\Rightarrow$ $\frac{-2}{-1} \cdot \frac{-\frac{5}{2}}{-\frac{5}{2}-1} = \frac{-2}{-1} \cdot \frac{-\frac{5}{2}}{-\frac{7}{2}} = \frac{-2}{-1} \cdot \frac{5}{7} = \frac{10}{7}$ $D_f = \mathbb{R} - \{-1, 0, -\frac{5}{2}\}$	۱
الف) $x^2 - 9 = 0 \Rightarrow x^2 = 9 \Rightarrow x = \pm 3$ $\frac{x^2}{x^2 - 9} = \frac{x^2}{x^2 - 9} \Rightarrow x = \frac{9}{x}$ ب) ① $x-1 > 0 \Rightarrow x > 1$ ② $x - \sqrt{x-1} > 0 \Rightarrow \sqrt{x-1} \leq x \Rightarrow x-1 \leq x^2 \Rightarrow x \leq 1$ $D_f = [1, 1]$	۲
① $x^2 - 1 > 0 \Rightarrow x > 1$ $x < -1$ ② $\sqrt{x^2 - 1} + 1 \neq 0$ ③ $x^2 - x - 2 > 0 \Rightarrow (x-2)(x+1) > 0 \Rightarrow x < -1$ $x > 2$	۳
$\frac{x}{x^2 - 1} = \frac{-2}{0} + \frac{0}{1} \Rightarrow x^2 - 2x - 2 = 0 \Rightarrow x = 1 \pm \sqrt{3}$ $\Rightarrow (-1(2x^2 + x - 9)) = (x^2 + x - 12) = 0$ $(x + \frac{1}{x})(x - \frac{1}{x}) - 2 \cdot \frac{1}{x} = 0$ $a + b = \frac{-1}{x} + \frac{1}{x} = 0$	۴
$x^2 - 2 - x \geq 0 \Rightarrow x \geq 1$ ($x \geq 1$) $2x + 3 - x \geq 0 \Rightarrow x \geq -3$ $g(x) = \frac{\sqrt{2x-2}}{\sqrt{x+3}}$ $x \geq 1$ $1 \leq x$ $x < 1 \Rightarrow -3 \leq x < 1$ $D_f = [-3, \infty)$	۵

$$\sin \frac{\pi}{r} = \sqrt{\frac{r}{r}}$$

$$f\left(\frac{\sqrt{r}}{r} + 1\right) = f\left(\frac{\sqrt{r} + r}{r}\right)$$

$$\cos \frac{\pi}{r} = 1$$

$$rx^r - rx = r(x - 1)$$

$$rx \cdot \frac{\sqrt{r} + r}{r} \left(\frac{\sqrt{r} - r}{r} \right) = \frac{r - r}{r} = -\frac{1}{r}$$

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$$f(a) = \frac{x+1}{x-1}$$

$$f(f(a)) = \frac{\frac{x+1}{x-1} + 1}{\frac{x+1}{x-1} - 1} = \frac{\frac{x+1+x-1}{x-1}}{\frac{x+1-x+1}{x-1}} = \frac{x}{1} = x$$

1 جز: 2 جز: 1 جز

$$R = \{1\}$$

$$a \neq d = 0 \Rightarrow f \circ f(x) = x$$

$$D_f = R - \{1\}$$

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$$x^r - rx - r \Rightarrow x^r - rx + r = 0 \Rightarrow (x - r)^r = 0$$

$$f(x) = f(\sqrt{x-1}) \Rightarrow (x-1) - r(\sqrt{x-1}) = -r$$

$$\Rightarrow x = r \Rightarrow y(0) = r \Rightarrow \sqrt{x-1} = r \Rightarrow x-1 = r^2 \Rightarrow x = r^2 + 1$$

$$D_f = (-\infty, 1) \cup [1, \infty)$$

$$a^r = r^2 \pm \sqrt{\Delta}$$

$$a \pm \sqrt{r}$$

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$$f(x+r) = (x+r)(x-1) + r \Rightarrow f(x+r) = (x+r)(x-1) + r$$

$$x^r - rx - r + r$$

$$\Rightarrow f(x) = (x)(x-1) + r = x^2 - x + r$$

$$rx \vee r = 1 \in \mathbb{R}$$

$$\Rightarrow f(-r) = (-r)(-1-r) + r = r \Rightarrow f(r) = (r)(-1) + r = 1$$

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$$r_1 d = r \cos^2 x + d \cos x \xrightarrow{x=r} r \cos^2 x + d \cos x - r = 0$$

$$\cos^2 x + d \cos x - r = 0 \Rightarrow \left(\cos x + \frac{1+r}{d} \right) \left(\cos x - \frac{1+r}{d} \right)$$

$$\tan^2 x = \frac{1}{\cos^2 x} - 1 = r$$

$$\cos^2 x + d \cos x - 1 = 0$$

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