

۱۴, ۵

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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                |
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| <p>الف) <math>\frac{x-1}{x} - \frac{x}{x-1} = \frac{(x-1)^2 - x^2}{x(x-1)} \rightarrow \frac{(x-1-x)(x-1+x)}{x(x-1)} = \frac{-x+1}{x(x-1)}</math></p> <p><math>D_f = \left(0, \frac{1}{2}\right] \cup (1, \infty) \cup \left(\frac{1}{2}, 1\right) \cup (-\infty, 0)</math></p> <p><math>\frac{x-1}{x} - \frac{x}{x-1} = \frac{-x+1}{x(x-1)} = \frac{(x+1)(x+2)(x-2)}{x(x+1)(x+2)}</math></p> <p><math>D_f = \mathbb{R} - \left\{-\frac{1}{2}, 0, \frac{1}{2}\right\}</math></p> | <p>۱, ۲, ۵</p> |
| <p>الف) <math>\left(\frac{1}{x}\right)^x - 9 \neq 0 \rightarrow \frac{1}{x^x} \neq 9 \rightarrow x \neq -2</math></p> <p><math>D_f = (-\infty, -2] \cup [2, \infty)</math></p> <p><math>x \geq 1</math> (II) <math>D_f = [1, \infty)</math></p> <p><math>x \leq -2</math> (I) <math>x \leq -2</math></p>                                                                                                                                                                         | <p>۲</p>       |
| <p><math>x^2 - x - 2 &gt; 0 \rightarrow x^2 - x - 3 &gt; 1 \rightarrow \Delta = b^2 - 4ac \rightarrow 1 + 12 = 13</math></p> <p><math>\frac{-b \pm \sqrt{\Delta}}{2a} = \frac{1 \pm \sqrt{13}}{2}</math></p> <p><math>D_f = \mathbb{R} - \left[\frac{1-\sqrt{13}}{2}, \frac{1+\sqrt{13}}{2}\right] = (-1, 1)</math></p> <p><math>D_f = \mathbb{R} - \left[\frac{1-\sqrt{13}}{2}, \frac{1+\sqrt{13}}{2}\right]</math></p>                                                         | <p>۳</p>       |
| <p><math>x^2 - 2ax - c = 0 \rightarrow x = \frac{1}{x}</math></p> <p><math>x^2 + ba - b^2 = 0 \rightarrow b = \frac{1}{x} \pm \sqrt{\frac{1}{x^2} - 9}</math></p> <p><math>-\frac{1}{x} + \frac{1}{x} = 0</math></p>                                                                                                                                                                                                                                                             | <p>۴</p>       |
| <p><math>f(x) = x - 2 \geq 0 \rightarrow x \geq 2</math> (I) <math>I \cup III = [2, \infty)</math></p> <p><math>x + 2 \geq 0 \rightarrow x \geq -2</math> (II) <math>II \cup III = [-2, \infty)</math></p> <p><math>x - 2 \geq 0 \rightarrow x \geq 2</math> (III) <math>1 \cup 2 = [2, \infty)</math></p> <p><math>x + 2 \geq 0 \rightarrow x \geq -2</math> (IV)</p>                                                                                                           | <p>۵</p>       |

$$P(Va+V) = 1f_a + 1f = f_a - f \quad \text{فتا}$$

$$10a = \frac{0}{-18} \quad a = \frac{0}{-18} = 0$$

(1,5)

6

$$\sqrt{r-r} + \frac{1}{\sqrt{r-r}} + r + \sqrt{r+r} + \frac{1}{\sqrt{r+r}} + r =$$

(1,5)

7

$$\frac{\sqrt{r-r} + \sqrt{r+r}}{\sqrt{r-r}} + \sqrt{r-r} + \sqrt{r+r} + r = r\sqrt{r-r} + r\sqrt{r+r} + r =$$

$$\sqrt{r-r} + \sqrt{r+r} = \sqrt{4} \quad \text{(2,4 + 4)}$$

9

$$-r \rightarrow \frac{1}{r} f_{-r} - \frac{1}{r} f_{(0)} = \frac{1}{r} (1 + r_m + r_m)$$

$$-r f_0 = 1 + 0m$$

$$0 \rightarrow r f_0 - \frac{1}{r} f_{(0)} = r_m \rightarrow f_{(0)} = \frac{r}{r} m$$

$$-9m = 1 + 0m \quad -1f_m = 1 \quad m = \frac{1}{1f} \quad \frac{r}{r} f\left(\frac{1}{1f}\right) = -\frac{1}{r}$$

0

9

$$\left\{ \begin{array}{l} r f_n - r f_{-n} = f_m - n \\ r f_n - r f_{-n} = f_m + n \end{array} \right\} \rightarrow \begin{array}{l} -\frac{9}{r} f_{-n} + r f_n = f_m - \frac{r}{r} n \\ r f_n - f_m = f_m + n \end{array}$$

$$-\frac{9}{r} f_{-n} = f_m - \frac{r}{r} n \quad -\frac{9}{r} f_{-n} = f_m + \frac{1}{r} n$$

$$r f_n - f_m = f_m + n \quad -\frac{9}{r} f_{-n} = f_m + \frac{1}{r} n$$

$$f_m = f_m - \frac{1}{r} n$$

$$-\frac{9}{r} f_{-n} = f_m + \frac{1}{r} n \rightarrow -\frac{9}{r} f_{-n} = f_m + \frac{1}{r} n$$

$$-r f_m + r f_{-n} = f_m + n \quad -\frac{9}{r} f_{-n} = f_m + \frac{1}{r} n$$

$$f_m = f_m + \frac{1}{r} n \quad n \geq 0$$

$$-f_m + \frac{1}{r} n \quad n < 0$$

(2)

1

$$a n + b + \frac{a}{n} + b \rightarrow \frac{a n^2 + r b n + a}{n} = \frac{r n^2 - 1 r n + r}{n} \quad a \leq r$$

$$b = -f$$

(2)

1.

$$r n - f = f_m \rightarrow f_{-1} = -r - f = -9$$