

19, 25

عمر شپا ریاضی تکلیف شماره ۲۳ - ۲۲

$$\log_{mn}^{mr} n \rightarrow \log_{mn}^{mr} + \log_{mn}^n \rightarrow \frac{1}{\log_{mn}^{mr}} + \frac{1}{\log_{mn}^n} \quad (1) -$$

$$\rightarrow \frac{1}{\log_{mr}^m + \log_{mr}^h} + \frac{1}{\log_{mn}^m + \log_{mn}^n}$$

$$\Rightarrow \frac{1}{\frac{1}{r} + \frac{1}{ra}} + \frac{1}{a+1} \Rightarrow \frac{ra+1}{a+1} \Rightarrow \left[\frac{ra+1}{a+1} \right] \Rightarrow \left[\frac{a+ra}{a+1} \right]$$

$$\left[\frac{a}{a+1} \right] + 1 \Rightarrow 0+1 = 1 \quad \checkmark$$

کو کتله از منفی ۲

$$1) \frac{x}{\log_{\frac{1}{2}} x} \geq 0 \rightarrow \frac{0}{+} - \frac{+}{-} = + \quad x > 0$$

$$\Rightarrow D_f = \left(\frac{1}{2}, +\infty \right)$$

$$2) x^2 - x - 2 > 0 \Rightarrow (x-2)(x+1) > 0$$

$$x^2 - 1 \geq 0 \rightarrow (x-1)(x+1) \geq 0$$

$$\frac{-1}{+} \frac{1}{-} \rightarrow D_f = (-\infty, -1) \cup (1, +\infty) \quad \checkmark$$

$$2 \log_{\frac{1}{2}} a + \log_{\frac{1}{2}} a = 2$$

$$\rightarrow \log_{\frac{1}{2}} a + \log_{\frac{1}{2}} a = 2$$

$$\rightarrow \log_{\frac{1}{2}} a + \frac{1}{\log_{\frac{1}{2}} a} = 2 \rightarrow t + \frac{1}{t} = 2 \Rightarrow t^2 - 2t + 1 = 0$$

$$= (t-1)^2 = 0$$

$$= t = 1$$

$$\Rightarrow \log_{\frac{1}{2}} a = 1 \Rightarrow a = \frac{1}{2} \quad \checkmark$$

$$(10^{\frac{1}{2}} - 10^{\frac{1}{3}})x^2 + (10^{\frac{1}{3}})x - 10^{\frac{1}{6}}x^{\frac{1}{2}} = 0$$

(2)

$$\rightarrow (10^{\frac{1}{2}} - 10^{\frac{1}{3}})x^2 + (10^{\frac{1}{3}})x - 10^{\frac{1}{6}}x^{\frac{1}{2}} = 0$$

$$\rightarrow (1 - 10^{\frac{1}{3}} - 10^{\frac{1}{6}})x^2 + (10^{\frac{1}{3}})x - (1 - 10^{\frac{1}{3}} - 10^{\frac{1}{6}}) = 0$$

$$\Rightarrow 10^{\frac{1}{3}}x^2 + 10^{\frac{1}{6}}x - 1 = 0$$

$$\Rightarrow 3x^2 + 8x - 11 = 0 \rightarrow x^2 + 8x - 11 = 0$$

$$\Rightarrow (x+11)(x-1) = 0 \rightarrow x = \frac{11}{3} = 1$$

$$\Rightarrow \left| 1 + \frac{11}{3} \right| = \boxed{\frac{14}{3}} \checkmark$$

$$10^{\frac{1}{2}}_{1/3} \rightarrow \frac{10^{\frac{1}{2}}}{10^{\frac{1}{3}}} = \frac{10^{\frac{1}{2}} + 10^{\frac{1}{3}}}{10^{\frac{1}{3}} + 10^{\frac{1}{3}}} = \frac{10}{2} = \boxed{\frac{5}{1}} \checkmark$$

(2) - 6

$$10^{\frac{1}{2}}_{1/2} \rightarrow \frac{10^{\frac{1}{2}}}{10^{\frac{1}{2}}} = \frac{10^{\frac{1}{2}} + 10^{\frac{1}{2}}}{10^{\frac{1}{2}} + 10^{\frac{1}{2}}} = \frac{1 + \frac{1}{2}}{1 + \frac{1}{2}} = \frac{1.5}{1.5} = \boxed{\frac{3}{3}} \checkmark$$

(2) - 9

$$10^{\frac{1}{2}}_{1/3} = 10^{\frac{1}{3}}_{1/3} \rightarrow 10^{\frac{1}{3}} + \frac{1}{3} 10^{\frac{1}{3}}$$

(2) - 1

$$10^{\frac{1}{2}}_{1/2} = 10^{\frac{1}{2}}_{1/2} \rightarrow 10^{\frac{1}{2}} + 10^{\frac{1}{2}} = m \Rightarrow \frac{1}{2} 10^{\frac{1}{2}} + \frac{1}{2} = m$$

$$\Rightarrow 10^{\frac{1}{2}} = \frac{2m-1}{1}$$

$$\Rightarrow \left| 1 + \frac{2m-1}{1} \right| = \boxed{\frac{2m+1}{1}} \checkmark$$

٨- ان دو طرف وٽ اسڪریم

$$\log\left(\frac{4}{10}\right)^{2x-1} = \log\left(\frac{5}{10}\right)^{2x^2}$$

(٢)

$$\Rightarrow 2x-1 \left(\log\frac{4}{10}\right) = 2x^2 \left(\log\frac{5}{10}\right)$$

$$2x-1 \left(\log\frac{4}{10}\right) = 2x^2 (\log 5 - \log 2)$$

$$\Rightarrow 2x-1 \left(\frac{\log 4}{\log 10} - 1\right) = 2x^2 \left(\frac{\log 10}{\log 2} - \log 2\right)$$

$$\Rightarrow -2x+1 = 2x^2$$

$$\Rightarrow 2x^2 + 2x - 1 = 0 \rightarrow x^2 + 2x - \frac{1}{2} = 0$$

$$(x+3)(x-1) = 0 \rightarrow x = \frac{1}{2} \quad \vee \quad x = -1 \text{ غلط } \Rightarrow 2x+1 > 0$$

$$\log\left(\frac{4}{10}\right)^{\frac{1}{2}+1}$$

$$\Rightarrow \log\frac{4}{10} + \log\frac{4}{10} = \boxed{\frac{2}{5}} \quad \checkmark$$

$$\log\frac{6}{10} = \frac{2}{3}(1+a) \Rightarrow \log\frac{6}{10} = \frac{2}{3}(\log 2 + \log 3)$$

(٢) - ٩

$$\Rightarrow \log\frac{6}{10} = \frac{2}{3}\log 2 \Rightarrow \log\frac{6}{10} = \log\frac{2^2}{10} \Rightarrow 6 = 2^2$$

$$\log\left(\frac{2^2}{10}\right) - 1 \Rightarrow \log 10 = \boxed{2} \quad \checkmark$$

$$Pa = b + c \Rightarrow \frac{Pa}{b} = \log 2 \Rightarrow \log 2 = \log 2$$

(٢) - ١٠

$$\Rightarrow Pa = b \log 2$$

$$\Rightarrow b \log 2 = b + c \Rightarrow c = b \log 2 - b \log 10 \Rightarrow c = b \log 2^{-1}$$

$$\left(2^{-\frac{1}{n}}\right)^{\frac{c}{b}} \Rightarrow 2^{-\frac{1}{n}} \left(\frac{b \log 2^{-1}}{b \log 2^{\frac{1}{2}}}\right) \Rightarrow 2^{-\frac{1}{n}} \left(\log 2^{-\frac{1}{2}}\right)$$

$$\Rightarrow 2^{-\frac{1}{n} \times -2 (\log 2)} \Rightarrow 2^{\frac{1}{n}} (\log 2) \Rightarrow \omega^{\frac{1}{n}} (\log 2)$$

$$\Rightarrow \boxed{\sqrt[n]{\omega}} \quad \checkmark$$

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الف $\frac{n}{\lg_{\frac{1}{r}} n} \geq 0 \rightarrow \frac{n}{-\lg_r n} \geq 0 \xrightarrow{n > 0} \lg_r n < 0$ (0, 1)

$n < r \rightarrow \boxed{n < 1}$