نام و نام خانوادگی: پارسا ایروانی

۲۰

تکلیف شماره ۲۴ یازدهم پیش B

۱- (۲)

$f(x)=3^{Ax+B}$ $\quad y=x^2$ $\quad$ نقاط $\Rightarrow (1,1),(3,9)$

$f(1)=3^{A+B}=1 \Rightarrow A+B=0$ $\quad f(3)=9 \Rightarrow 3^{3A+B}=9 \Rightarrow 3A+B=2 \Longrightarrow A=1, B=-1$

$f(x)=3^{x-1} \Longrightarrow f(0)=\frac{1}{3}$

۲- (۲)

$\log_2^{(4^x+15)}=x+3 \Rightarrow 2^x\times 8=4^x+15 \Rightarrow 4^x-2^x\times 8+15=0 \xrightarrow{2^x=t} t^2-8t+15=0$

$\Rightarrow (t-5)(t-3)=0 \Rightarrow$ $t=3 \Rightarrow 2^x=3 \Rightarrow x=\log_2^3$; $t=5 \Rightarrow 2^x=5 \Rightarrow x=\log_2^5$

$\log_2^5+\log_2^3=\boxed{\log_2^{15}}$

۳- (۲)

$(\log_{21}^3)^2+\log_{21}^{(147)}\log_{21}^{(1323)}$ $\quad \log_{21}^{1323}=\log_{21}^{9\times 147}=\log_{21}^9+\log_{21}^{147}=2\log_{21}^3+\log_{21}^{147}$

$\Rightarrow (\log_{21}^3)^2+\log_{21}^{147}(2\log_{21}^3+\log_{21}^{147})=(\log_{21}^3)^2+2\log_{21}^3\log_{21}^{147}+(\log_{21}^{147})^2$

$=(\log_{21}^3+\log_{21}^{147})^2=(\log_{21}^{441})^2=(\log_{21}^{21^2})^2=(2\log_{21}^{21})^2=4$

۴- (۲)

$\log(x^2-2x+1)+3\log(1-x)=5 \Rightarrow \log(1-x)^2+3\log(1-x)=5 \Rightarrow 5\log(1-x)=5$

$\Rightarrow \log(1-x)=1 \Rightarrow 1-x=10 \Rightarrow x=-9$ $\quad$ پاسخ: $\log_3^{(-x)}=\log_3^9=2$

۵- (۲)

$\log_2^{(x^2+2x+4)}+\log_2^{(x-2)}=3 \Rightarrow \log_2^{((x-2)(x^2+2x+4))}=3 \Rightarrow \log_2^{(x^3-8)}=3$

$\Rightarrow x^3-8=8 \Rightarrow x=\sqrt[3]{16}=2^{\frac{4}{3}}$ $\quad$ پاسخ: $\log_{\sqrt{2}}^x=\log_{2^{\frac{1}{2}}}^{2^{\frac{4}{3}}}=4$

۶- (۲)

$\log(2-x)-\log\frac{1}{(x-2)^2}=3 \Rightarrow \log(2-x)+\log(x-2)^2=3 \xrightarrow{\log(x-2)^2=\log(2-x)^2}$

$\log(2-x)+\log(2-x)^2=3 \Rightarrow \log(2-x)+2\log(2-x)=3 \Rightarrow 3\log(2-x)=3 \Rightarrow \log(2-x)=1$

$\Rightarrow 2-x=10 \Rightarrow x=-8$ $\quad$ پاسخ: $\log_{\sqrt{2}}^{(-x)}=\log_{\sqrt{2}}^8=\log_{2^{\frac{1}{2}}}^{2^3}=6$

۷- (۲)

$3^{x^2-2}=81^x \Rightarrow 3^{x^2-2}=3^{4x} \Rightarrow x^2-2=4x \Rightarrow x^2-4x-2=0 \Longrightarrow \Delta=16+8=24$

$\Rightarrow x=\frac{4\pm 2\sqrt{6}}{2}$ $\rightarrow \frac{4+2\sqrt{6}}{2}$ قق $\Rightarrow \log_6^{(\frac{4+2\sqrt{6}}{2}-2)}=\log_6^{(\frac{4+2\sqrt{6}-4}{2})}=\log_6^{\frac{2\sqrt{6}}{2}}=\log_6^{\sqrt{6}}=\frac{1}{2}$

$\rightarrow \frac{4-2\sqrt{6}}{2}$ غق $\xrightarrow{\text{چون}} x-2>0 \Rightarrow x>2$

۸- (۲)

$3^{\frac{5}{8}}=2$ $\quad \log_{18}^8=\log_{2\times 3^2}^{2^3}=\log_{3^{\frac{5}{8}}\times 3^2}^{3^{\frac{15}{8}}}=\log_{3^{\frac{21}{8}}}^{3^{\frac{15}{8}}}=\frac{\frac{15}{8}}{\frac{21}{8}}=\frac{15}{21}=\frac{5}{7}$

۹- (۲)

$\log_4^3=0.8 \Rightarrow \frac{1}{2}\log_2^3=0.8 \Rightarrow \log_2^3=1.6 \Rightarrow 2^{\frac{16}{10}}=3$

$\log_{12}^6=\log_{3\times 2^2}^{3\times 2}=\log_{2^{\frac{16}{10}}\times 2^2}^{2^{\frac{16}{10}}\times 2}=\log_{2^{\frac{36}{10}}}^{2^{\frac{26}{10}}}=\frac{\frac{26}{10}}{\frac{36}{10}}=\frac{26}{36}=\frac{13}{18}$

۱۰- (۲)

$(a\log 2)x^2+ax+b\log 2=0 \Rightarrow x=-1 \Rightarrow a\log 2-a+b\log 2=0$

$\Rightarrow (a+b)\log 2=a \Rightarrow (\frac{a+b}{a})\log 2=1 \Rightarrow \log_{10}^{2^{(\frac{a+b}{a})}}=1 \longrightarrow 2^{(\frac{a+b}{a})}=10$

$\Rightarrow 2^{(1+\frac{b}{a})}=10 \Rightarrow 2\times 2^{\frac{b}{a}}=10 \Rightarrow \underbrace{2^{\frac{b}{a}}=5}$ $\longrightarrow \log_{\sqrt{2}}^x=\frac{b}{a} \Rightarrow 2\log_2^x=\frac{b}{a}$

$\log_2^5=\frac{b}{a} \longrightarrow x=\sqrt{5}$

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