نام و نام خانوادگی: سیدرضا کاظمیان شماره داوطلبی: ۲۵ شماره صندلی: ۲۳ کلاس: یازدهم B

$y=x^2 \to x=1 \Rightarrow y=1$ ، $x=2, y=4$ ← خط گذرا

$f(1)=1=2^{A+B} \Rightarrow A+B=0$

$f(2)=4=2^{2A+B} \Rightarrow 2A+B=2$

$\Rightarrow A=1, B=-1$

$\Rightarrow f(x)=2^{x-1} \Rightarrow x=0 \Rightarrow y=\frac{1}{2}$ ✓

۱ (۲)

$\log_2^{4^x+15}=x+2 \Rightarrow 2^{x+2}=2^{2x}+15 \Rightarrow 2^2\times 2^x=2^{2x}+15 \Rightarrow 2^x=t$

$t^2-4t+15=0 \Rightarrow (t-3)(t-5)=0 \Rightarrow t=3 \Rightarrow 2^x=3 \Rightarrow x=\log_2^3$

$t=5 \Rightarrow 2^x=5 \Rightarrow x=\log_2^5$

$\Rightarrow \log_2^3+\log_2^5=\log_2^{15}$ ✓

۲ (۲)

$\log_{21}^{147}=\log_{21}^{21}+\log_{21}^{7}=1+\log_{21}^{7} \Rightarrow \log_{21}^{7}=\log_{21}^{21}-\log_{21}^{3}=2-\log_{21}^{3}$

$\log_{21}^{1323}=\log_{21}^{21^2}+\log_{21}^{3}=2+\log_{21}^{3} \Rightarrow (\log_{21}^{3})^2+(2+\log_{21}^{3})(2-\log_{21}^{3})$ نزدیک

$(\log_{21}^{3})^2+4-(\log_{21}^{3})^2=4$ ✓

۳ (۲)

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

$5\log(1-x)=5 \Rightarrow \log(1-x)=1 \Rightarrow 10=1-x \Rightarrow x=-9$ ✓

$\Rightarrow \log_3^{(-(-9))}=\log_3^9=2$ ✓

۴ (۲)

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

$\log_2^{x^3-8}=3 \Rightarrow x^3=16 \Rightarrow x=\sqrt[3]{16}$ ✓ $\Rightarrow \log_{2^{\frac{1}{3}}}^{2^{\frac{4}{3}}}=4$ ✓

۵ (۲)

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

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

۶ (۲)

$3^{x^2-2} = (3^x)^x \Rightarrow x^2-2 = 4x \Rightarrow x^2-4x-2=0 \Rightarrow x = \frac{4 \pm \sqrt{16+8}}{2}$

$\Rightarrow \frac{4+2\sqrt{6}}{2} \Rightarrow 2+\sqrt{6} \Rightarrow \log_{\sqrt{6}}^{6} = \frac{1}{2}$ ✓ ✓ ✓

$\frac{4-2\sqrt{6}}{2}$ → غیرقابل قبول ✗

۷ (۲)

$\log_{2}^{3} = \frac{3}{8} \Rightarrow \log_{2}^{3} = \frac{3}{8} \Rightarrow \frac{1}{\log_{18}^{8}} = \log_{18}^{2} \Rightarrow \log_{2^3}^{2} + \log_{2^3}^{3^2}$

$\Rightarrow \frac{1}{3} + \frac{2}{3} \times \frac{3}{2} = \frac{3}{4} = \log_{18}^{18} \Rightarrow \log_{18}^{8} = \frac{12}{18} = \frac{2}{3}$ ✓ ✓ ✓

۸ (۲)

$\log_{12}^{6} = \frac{\log_{6}^{6}}{\log_{6}^{12}} \Rightarrow \frac{\log_{6}^{3} + \log_{6}^{2}}{\log_{6}^{3} + \log_{6}^{6}} \Rightarrow \frac{0.6 + 0.6}{1 + 0.6} = \frac{12}{16}$ ✓ ✓ ✓

$\log_{3}^{6} = \frac{6}{10}$

۹ (۲)

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

$\Rightarrow \frac{1}{\log 2} = 1 + \frac{b}{a} \Rightarrow \log_{2}^{10} - \log_{2}^{2} = \frac{b}{a} \Rightarrow \log_{2}^{5} = \frac{b}{a}$

۱۰ (۲)

$(\sqrt{2})^{\log_{2}^{3}} = 3^{\log_{2}^{\sqrt{2}}} \Rightarrow 3^{\frac{1}{2}} = \sqrt{3}$ ✓ ✓ ✓