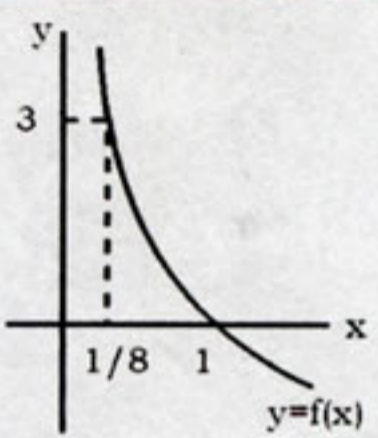
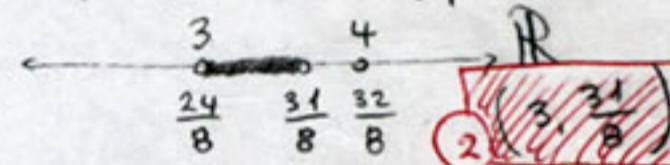


11 C	Ad Soyad	
1	No	
10 puan	<p>$\log_3 5 = x$ $\log_2 3 = \frac{1}{y}$</p> <p>$\rightarrow \log_6 20$, x ve y cinsinden neye eşittir?</p> <p>$\log_3 2 = y$</p>	<p>$\log_6 20 = \frac{\log_3 20}{\log_3 6} = \frac{\log_3 2^2 \cdot 5}{\log_3 3 \cdot 2} = \frac{2 \log_3 2 + \log_3 5}{\log_3 3 + \log_3 2} = \frac{2y + x}{1 + y}$</p>
10 puan	<p>$f(x) = \log_{(x-5)}(7-x)$ ise f'nin en geniş tanım kümesini bulun.</p> <p>$7-x > 0 \rightarrow x < 7$</p> <p>$x-5 > 0 \rightarrow x > 5$</p> <p>$x-5 \neq 1 \rightarrow x \neq 6$</p> <p>G.K. = $(5,7) - \{6\}$</p>	<p>$5 < x < 7$</p> <p>$x \neq 6$</p> <p>G.K. = $(5,7) - \{6\}$</p>
10 puan	<p>$x^{\log_3 x} + 3^{\log_3 x} - 162 = 0$ denkleminin çözüm kümesini bulun.</p> <p>$x^{\log_3 x} + 3^{(\log_3 x)^2} - 162 = 0$</p> <p>$\log_3 x = a \rightarrow x = 3^a$</p>	<p>$(3^a)^2 + 3^{a^2} = 162$</p> <p>$3^{2a} + 3^{a^2} = 162$</p> <p>$2 \cdot 3^{a^2} = 162$</p> <p>$3^{a^2} = 81 = 3^4 \rightarrow a^2 = 4$</p> <p>$a = 2$ or $a = -2$</p> <p>$\log_3 x = 2 \rightarrow x = 9$</p> <p>$\log_3 x = -2 \rightarrow x = \frac{1}{9}$</p> <p>G.K. = $\{9, \frac{1}{9}\}$</p>
10 puan	<p>$x = \log_2 7$ $y = \log_5 6$ $z = \log_3 2$</p> <p>ise $2x+y+3z \in (5,11)$ olduğunu gösterin.</p> <p>$\log_2 4 < x < \log_2 8 \rightarrow 2 < x < 3$ (x2)</p> <p>$\log_5 5 < y < \log_5 25 \rightarrow 1 < y < 2$</p> <p>$\log_3 1 < z < \log_3 3 \rightarrow 0 < z < 1$ (x3)</p>	<p>$4 < 2x < 6$</p> <p>$1 < y < 2$</p> <p>$0 < 3z < 3$</p> <p>$5 < 2x+y+3z < 11$</p> <p>G.K. = $(5,11)$</p>
10 puan	<p>$\log_{16}(2 \log_3(1 + \log_2(1 + 3 \log_3 x))) = \frac{1}{4}$ denkleminin çözüm kümesini bulun.</p> <p>$a = 16^{\frac{1}{4}} = 2$</p> <p>$\log_3(1 + \log_2(1 + 3 \log_3 x)) = 1$</p> <p>$b = 3^1 = 3$</p>	<p>$\log_2(1 + 3 \log_3 x) = 2$</p> <p>$c = 2^2 = 4$</p> <p>$3 \log_3 x = 3$</p> <p>$\log_3 x = 1 \rightarrow x = 3$</p> <p>G.K. = $\{3\}$</p>

6	<p>2 $\log(\sin x) - \log(\sqrt{\sin x}) = 1$ denkleminin çözüm kümesini bulun.</p> <p style="text-align: center;">$\stackrel{2^0}{=}$</p> <p>$\sin^2 x = \sin x$</p> <p>$\log(\sin x) - \log \sqrt{\sin x} = 0$ $\log \sin x = \log \sqrt{\sin x}$ $\sin x = \sqrt{\sin x}$</p> <p>$\sin^2 x - \sin x = 0$ $\sin x (\sin x - 1) = 0$</p> <p>$\sin x = 0$ \vee $\sin x = 1$ → $\left\{ \frac{\pi}{2} + k\pi : k \in \mathbb{Z} \right\}$</p> <p>Logaritma bağımsız olur.</p>
7	<p>Şekilde; $f(x) = \log_a x$ fonksiyonunun grafiği verilmiştir. $f(16) \cdot f^{-1}(4) = ?$</p> <p>$\log_a \frac{1}{8} = 3$ $\frac{1}{8} = a^3 \rightarrow a = \frac{1}{2}$ $f(x) = \log_{\frac{1}{2}} x$</p>  <p>$f(16) = \log_{\frac{1}{2}} 16 = -\log_2 16 = -4$</p> <p>$f^{-1}(4) = m \rightarrow f(m) = 4$ $\log_{\frac{1}{2}} m = 4$ $m = \left(\frac{1}{2}\right)^4 = \frac{1}{16}$ $= -4 \cdot \frac{1}{16} = -\frac{1}{4}$</p>
8	<p>$\log_3(\log_{\frac{1}{2}}(4-x)) < 1$ eşitsizliğinin çözüm kümesini bulun.</p> <p>$\log_3(\log_{\frac{1}{2}}(4-x)) < \log_3 3$ $\log_{\frac{1}{2}}(4-x) < 3$ $\log_{\frac{1}{2}}(4-x) < 3 \left(= -\log_{\frac{1}{2}} \frac{1}{8} \right)$ $4-x > \frac{1}{8} \rightarrow x < \frac{31}{8}$</p> <p>$\log_{\frac{1}{2}}(4-x) > 0$ $\log_{\frac{1}{2}}(4-x) > \log_{\frac{1}{2}} 1$ $4-x < 1 \rightarrow x > 3$</p> <p>$4-x > 0 \rightarrow x < 4$</p> <p>$\left(3, \frac{31}{8} \right)$</p> 
9	<p>$\log 5 \cong 0,69 \rightarrow 25^{25}$ kaç basamaklıdır?</p> <p>$25^{25} = (5^2)^{25} = 5^{50}$</p> <p>$\log 25^{25} = \log 5^{50} = 50 \log 5$ $\cong 50 \cdot 0,69 \cong 34,5$</p> <p>Karakteristik = 34 Sayı (34+1) = 35 basamaklı</p> <p>$\begin{array}{r} 0,69 \\ \times 50 \\ \hline 34,5 \end{array}$</p>
10	<p>$1 + \frac{i}{1 + \frac{i}{1 + \frac{i}{1+i}}} = ?$</p> <p>$\frac{i}{1+i} \rightarrow \frac{1+2i}{1+i} \rightarrow \frac{i-1}{1+2i}$</p> <p>$\frac{i}{1 + \frac{1+2i}{1+i}} \rightarrow \frac{i-2}{3i} \rightarrow \frac{4i-2}{3i}$</p> <p>$\frac{4i-2}{3i} \rightarrow \frac{4i-5}{4i-2} = \frac{-16-12i-10}{-20} = \frac{26+12i}{20} = \frac{13}{10} + \frac{3i}{5}$</p>