$log\_{5}\left(x-8\right)+log\_{5}\left(x-3\right)=log\_{5}(13x+1)$ О.Д.З.$\left\{\begin{array}{c}х-8>0\\х-3>0\\13х+1>0\end{array}\right.$ $\left\{\begin{array}{c}х>8\\х>3\\х>-\frac{1}{13}\end{array}\right.$ х$>$8

 $log\_{5}\left(x-8\right)\left(x-3\right)=log\_{5}(13x-1)$

 (x-8)(x-3)=13x-1

 $x^{2}$-8x-3x+24=13-1

 $x^{2}$-11x+24-13x+1=0

 $x^{2}$-24x+25=0

 $x1=-1(уд.О.Д.З)\_{ } x\_{2}=25$ (по теореме Виета)

Ответ: 25