$f(x,y) = \ln(x-6y) \quad \Rightarrow \quad f_x(x,y) = \dfrac{1}{x-6y}$ and $f_y(x,y) = -\dfrac{6}{x-6y}$, so $f_x(13,2) = 1$ and $f_y(13,2) = -6$. Then the linear approximation of f at $(13,2)$ is given by
$f(x,y) \approx f(13,2) + f_x(13,2)(x-13) + f_y(13,2)(y-2)$
$= 0 + 1(x-13) - 6(y-2) = x - 6y - 1$.
Thus $f(12.94, 2.07) \approx 12.94 - 6(2.07) - 1 = -0.48$. The graph shows that our approximated value is slightly greater than the actual value.