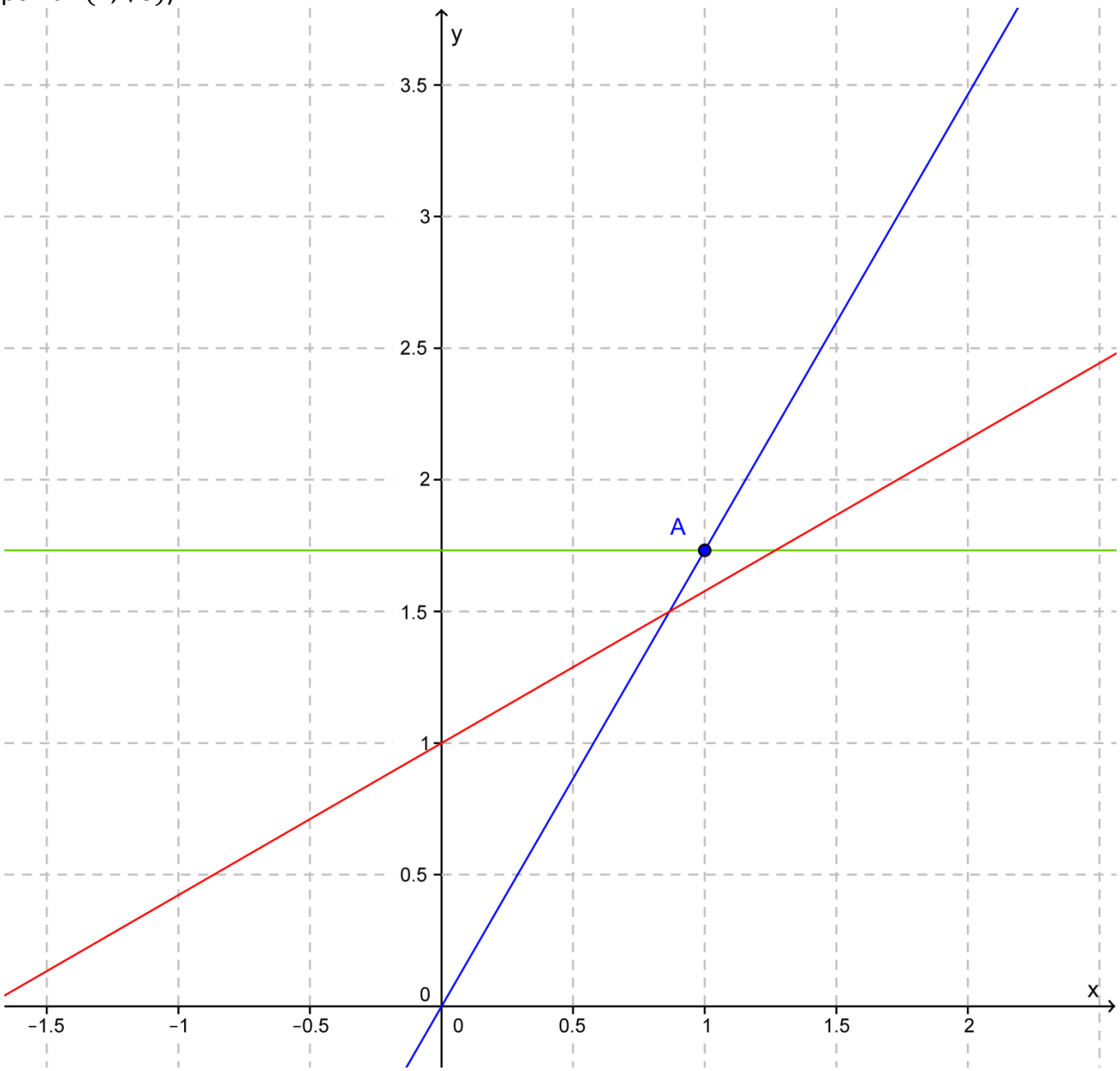
Answer on Question #46168 – Math - Analytic Geometry

Problem.

Find the equation of the line which passes through (1,under-root3) and makes an angle 30^0 with the line x - under-root3*y + under-root3 = 0.

Solution.

The slope of line $x-\sqrt{3}y+\sqrt{3}=0$ is $y=\frac{1}{\sqrt{3}}x+1$ (red line). $\frac{1}{\sqrt{3}}=\tan 30°$, so the slope of the line which makes an angle $30°$ with the line $\tan 0°=0$ or $\tan 30°=0$. Then the new line has equation $y=\sqrt{3}$ (green line) or $y=\sqrt{3}(x-1)+\sqrt{3}=\sqrt{3}x$ (blue line) (as the both pass through point $A(1,\sqrt{3})$).



Answer: $x=\sqrt{3}$ or $y=\sqrt{3}x$.