

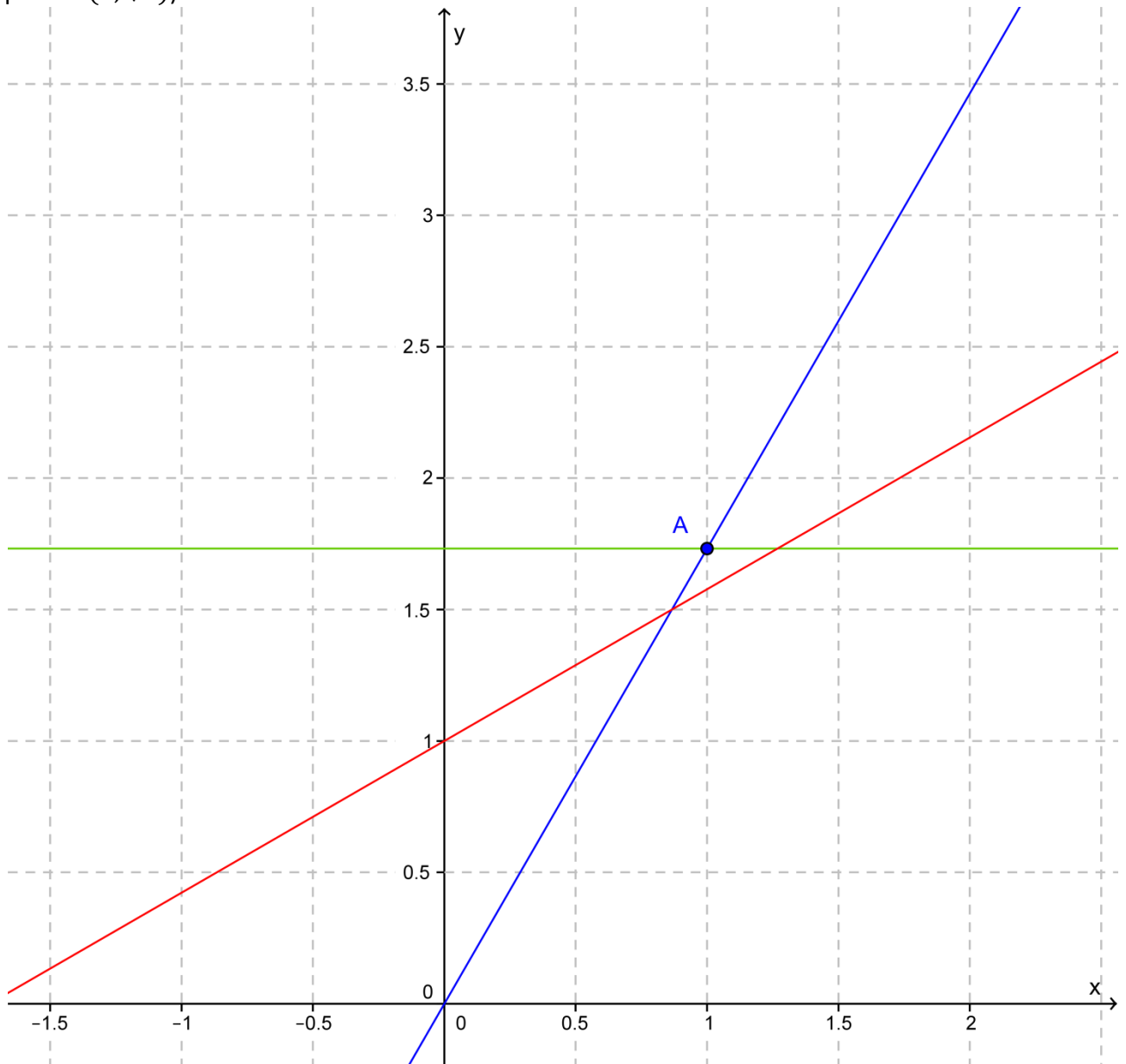
## Answer on Question #45085 – Math - Analytic Geometry

### Problem.

Find the equation of the line which passes through  $(1, \sqrt{3})$  and makes an angle  $30^\circ$  with the line  $x - \sqrt{3}y + \sqrt{3} = 0$ .

### Solution.

The slope of line  $x - \sqrt{3}y + \sqrt{3} = 0$  is  $y = \frac{1}{\sqrt{3}}x + 1$  (red line).  $\frac{1}{\sqrt{3}} = \tan 30^\circ$ , so the slope of the line which makes an angle  $30^\circ$  with the line  $\tan 0^\circ = 0$  or  $\tan 30^\circ = 0$ . 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  $y = \sqrt{3}x$ .