

# Educational Use of KeTCindy and KeTCindyJS

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## K<sub>E</sub>Tpic

- K<sub>E</sub>Tpic is a plug-in for some mathematical softwares to produce figures of L<sup>A</sup>T<sub>E</sub>X.
- It works as a kind of preprocessor of L<sup>A</sup>T<sub>E</sub>X graphical code system ‘tpic’.
- We started to develop it in 2006 with the use of Maple as the software.
- We extended the softwares to Mathematica, Scilab and R.

## KETpic 2 KETCindy

- We invited Kortenkamp, a main developer of Cinderella which is a DGS, and had a meeting in 2014. KETCindy was born from the meeting.
- Cinderella (Cindy) supports ‘CindyScript’, a programming language easy for us to use, which distinguishes Cindy from other DGSs.
- Cindy works as a GUI of KETpic in KETCindy.

## Advantages of K<sub>ET</sub>Cindy

- Teachers can produce teaching materials with figures interactively and more easily.
- They can use K<sub>ET</sub>Cindy not only for geometry but for various fields such as calculus, linear algebra, statistics and so on.
- We will show samples of K<sub>ET</sub>Cindy.

## How to install K<sub>E</sub>T Cindy

- CTAN(Comprehensive T<sub>E</sub>X Archive Network) has uploaded K<sub>E</sub>T Cindy to the site in 2018.

CTAN is the authoritative place where TeX related material and software can be found for download.

- You can download the package of K<sub>E</sub>T Cindy directly from <https://ctan.org/pkg/ketcindy>.
- Follow ‘readme’ in the folder ‘ketcindy(-master)’.
- KeTCindyReference(E,J).pdf ( and iBook (J)) are provided.

# KeTCindy page in CTAN

## ketcindy – Creating graphics for $\text{\TeX}$ using Cinderella

KeTCindy combines a plugin to Cinderella with free mathematical software (R, Maxima, ...) to produce high-quality  $\text{\LaTeX}$  graphics.

Using Cinderella to generate graphics in an interactive environment, the generated image can be fine-tuned using KeTCindy commands embedded into CindyScript, the scripting language of Cinderella.

KeTCindy can be regarded as a prominent scheme to establish an effective linkage between visualization tools and editing tools. Moreover, KeTCindy enables the importation of data calculated or simulated using other mathematical software such as Maxima, Fricas, Risa/Asir and R, and to combine them with the graphical data, so that an extremely wide range of mathematical objects can be presented.

|               |  |
|---------------|--|
| Sources       | <a href="#">/graphics/ketcindy</a>   |
| Documentation | <a href="#">README</a><br><a href="#">Reference manual (English)</a><br><a href="#">Reference manual (Japanese)</a> •<br><a href="#">User guide (English)</a><br><a href="#">User guide (Japanese)</a> • |
| Home page     | <a href="http://ketpic.com">http://ketpic.com</a>  |
| Support       | <a href="https://github.com/ketpic/ketcindy/issues">https://github.com/ketpic/ketcindy/issues</a>  |
| Bug tracker   | <a href="https://github.com/ketpic/ketcindy/issues">https://github.com/ketpic/ketcindy/issues</a>  |
| Repository    | <a href="https://github.com/ketpic/ketcindy">https://github.com/ketpic/ketcindy</a>  |
| Version       | 20190320.0   |
| Licenses      | <a href="#">GNU General Public License, version 3 or newer</a>   |
| Copyright     | 2014–2019 Setsuo Takato  |
| Maintainer    | <a href="#">Setsuo Takato</a>  |
| TDS archive   | <a href="#">ketcindy.tds.zip</a>   |
| Contained in  | $\text{\TeX}$ Live as ketcindy<br>$\text{MiKTeX}$ as ketcindy  |
| Topics        | <a href="#">Graphics</a><br><a href="#">Math</a>   |



[Download](#) the contents of this package in one zip archive (19.1M).

## Community Comments

No comments on this package are available yet. You can be the first to rate this package!



[Home page](#)



[Support](#)



[Bug tracker](#)



[Repository](#)

## Announcements



- 🔊 [2018-12-26 CTAN Update: ketcindy](#)
- 🔊 [2018-10-31 CTAN update: ketcindy](#)
- 🔊 [2018-06-18 New on CTAN: ketcindy](#)

## Suggestions

Maybe you are interested in the following packages as well.

- [mptrees: Probability trees with METAPOST](#)
- [tableauvariations: Variation tables in METAPOST](#)
- [pst-geometrictools: A PSTricks package to draw geometric figures](#)
- [pst-eucl: Euclidian geometry with PSTricks](#)

## Rating Summary

☆☆☆☆☆

0 [No votes]

This package has not been rated yet. You can be the first on

## My Rating

Only [registered](#) and authenticated members may vote. Please

## Package Links

## Enhancement of K<sub>E</sub>T Cindy

- ‘KeTslide’ to produce slides for presentation with animations has been implemented.
- ‘pict2e’/‘TikZ’ can be used as the graphical code.
- functions to call Maxima from K<sub>E</sub>T Cindy has been supported.
- functions to use gcc for speed-up hidden line processing.

## Web cite of K<sub>E</sub>T Cindy

- We have launched a web site for K<sub>E</sub>T Cindy.  
<https://s-takato.github.io/ketcindysample/>
- You can find samples of K<sub>E</sub>T CindyJS there.
- We will continue to add more samples.



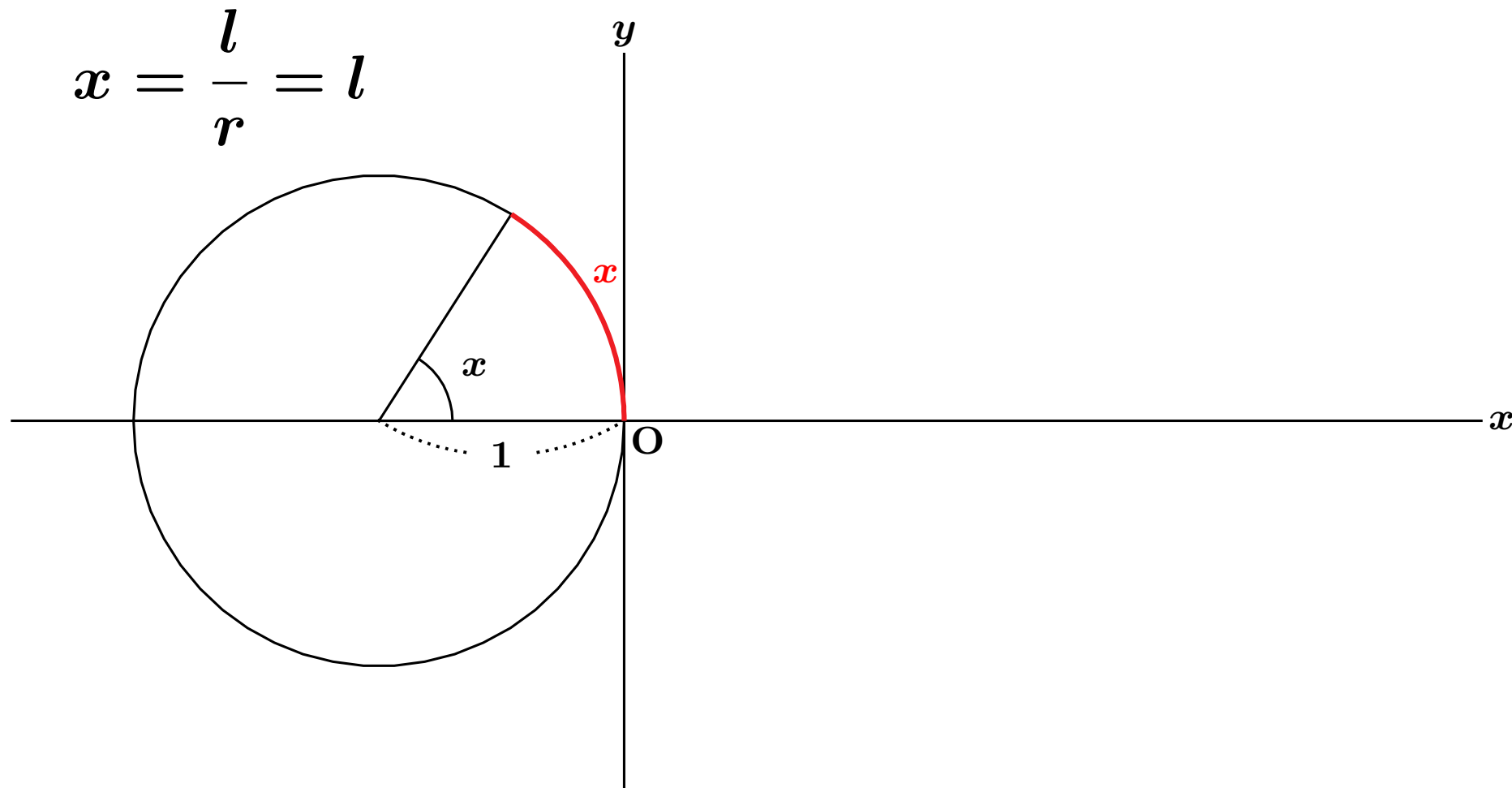
# Demonstrations

Demomovie

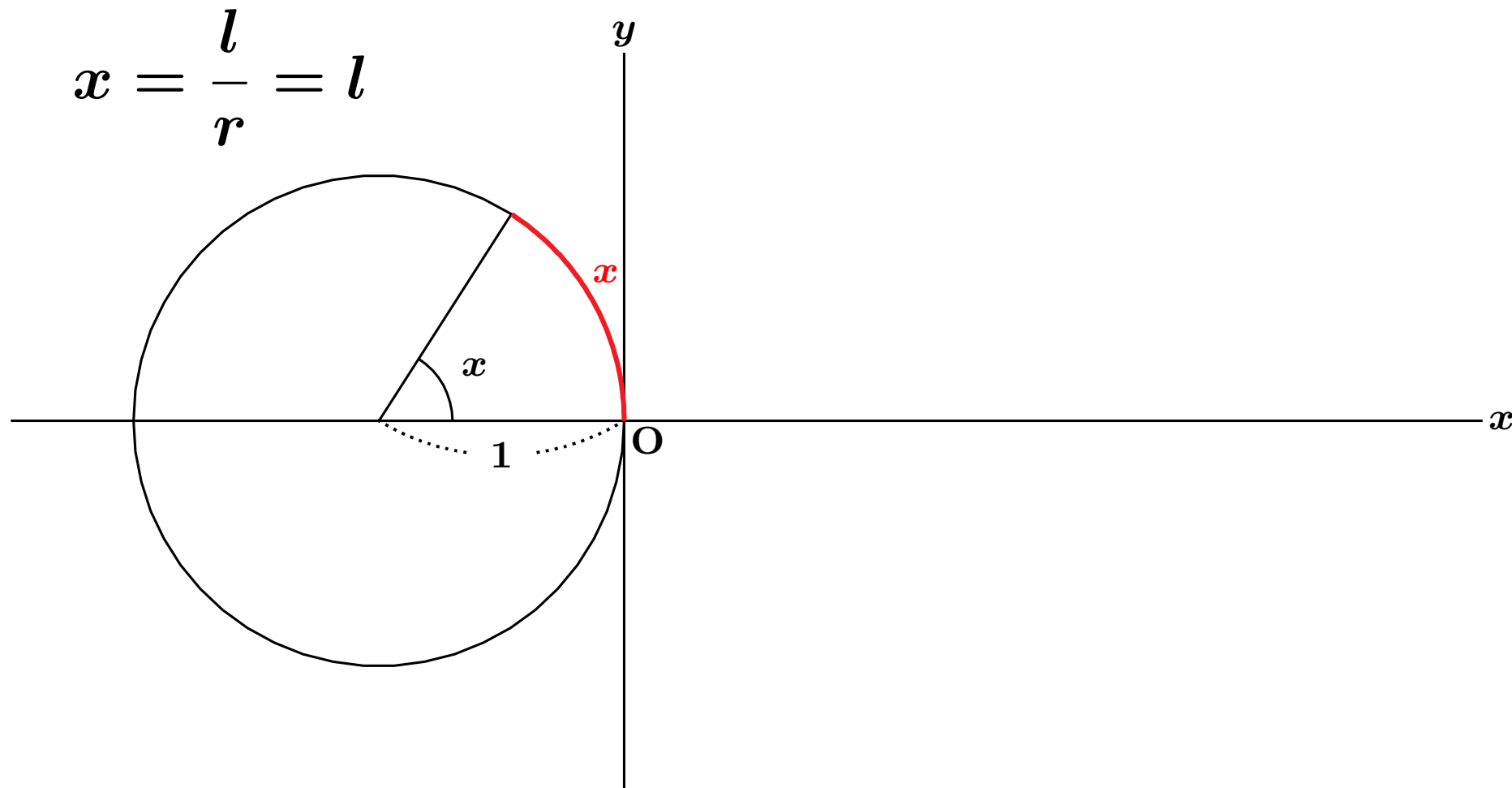
## Use of KeTslide

- For math materials, expressions and proper figures are of fundamental importance.
- KeTslide can be handled easily, so will be suitable for usual mathematics teachers.
- Animations and flip animations are also available.

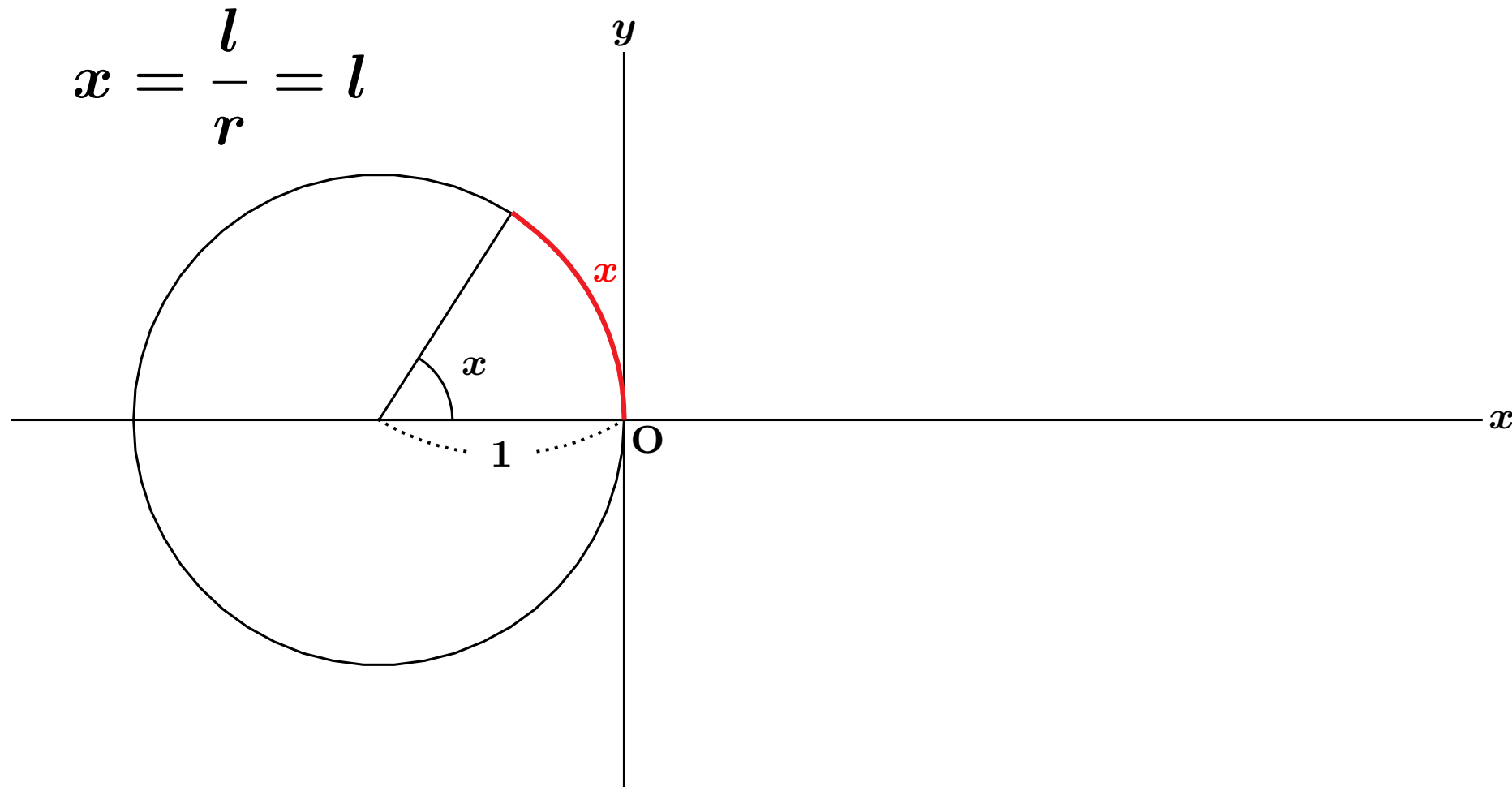
# Example of Flip Anime



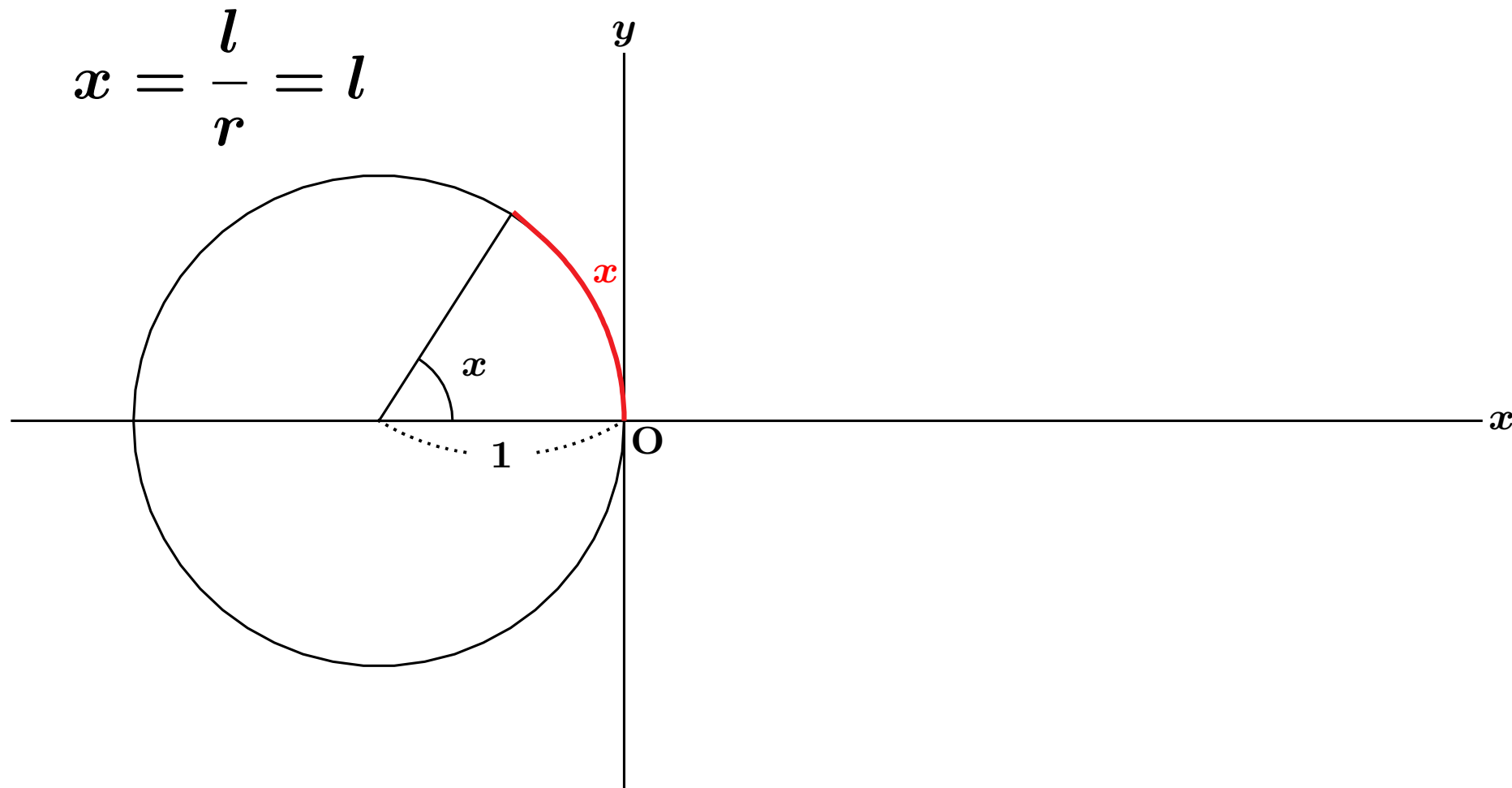
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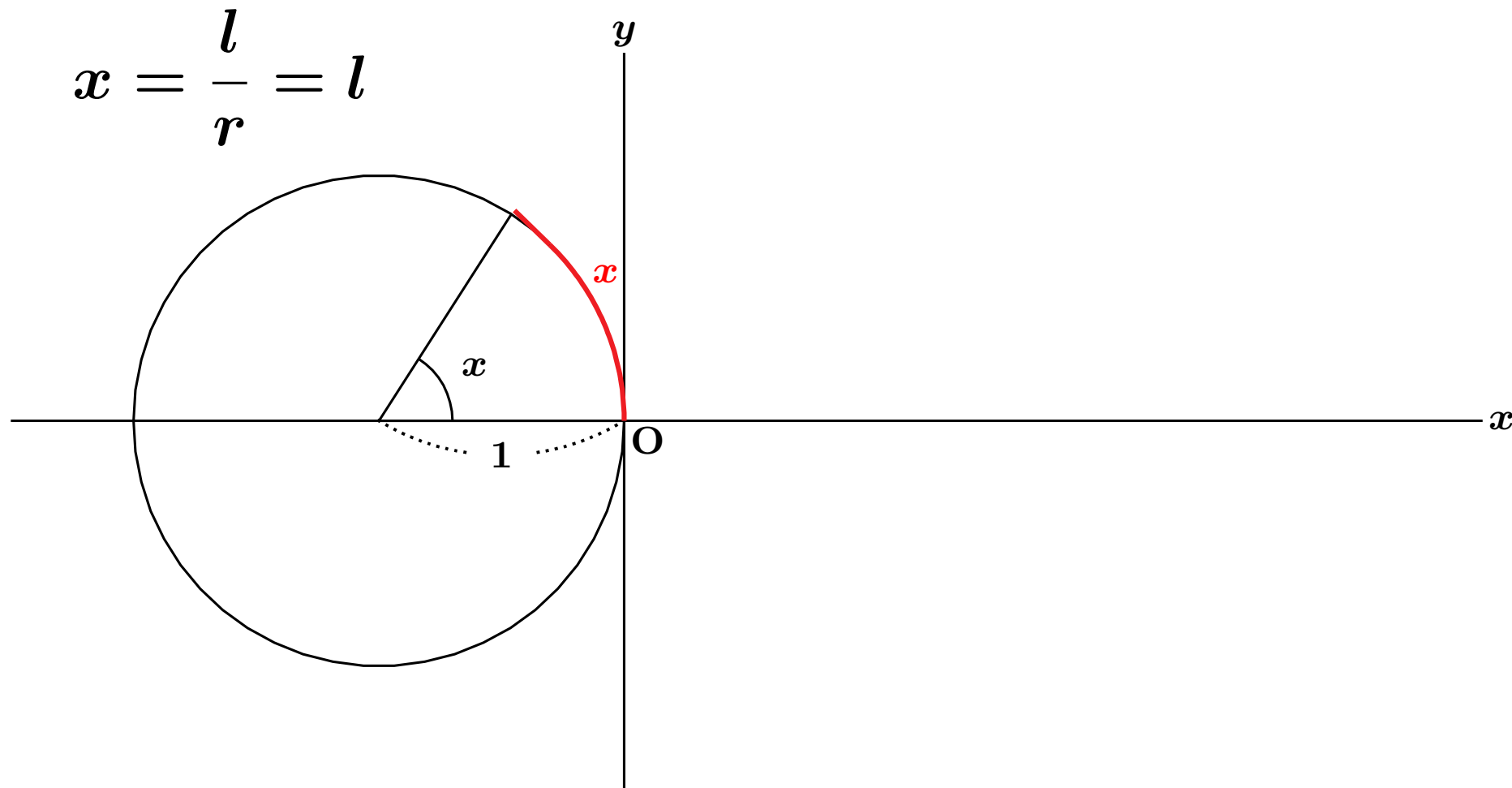
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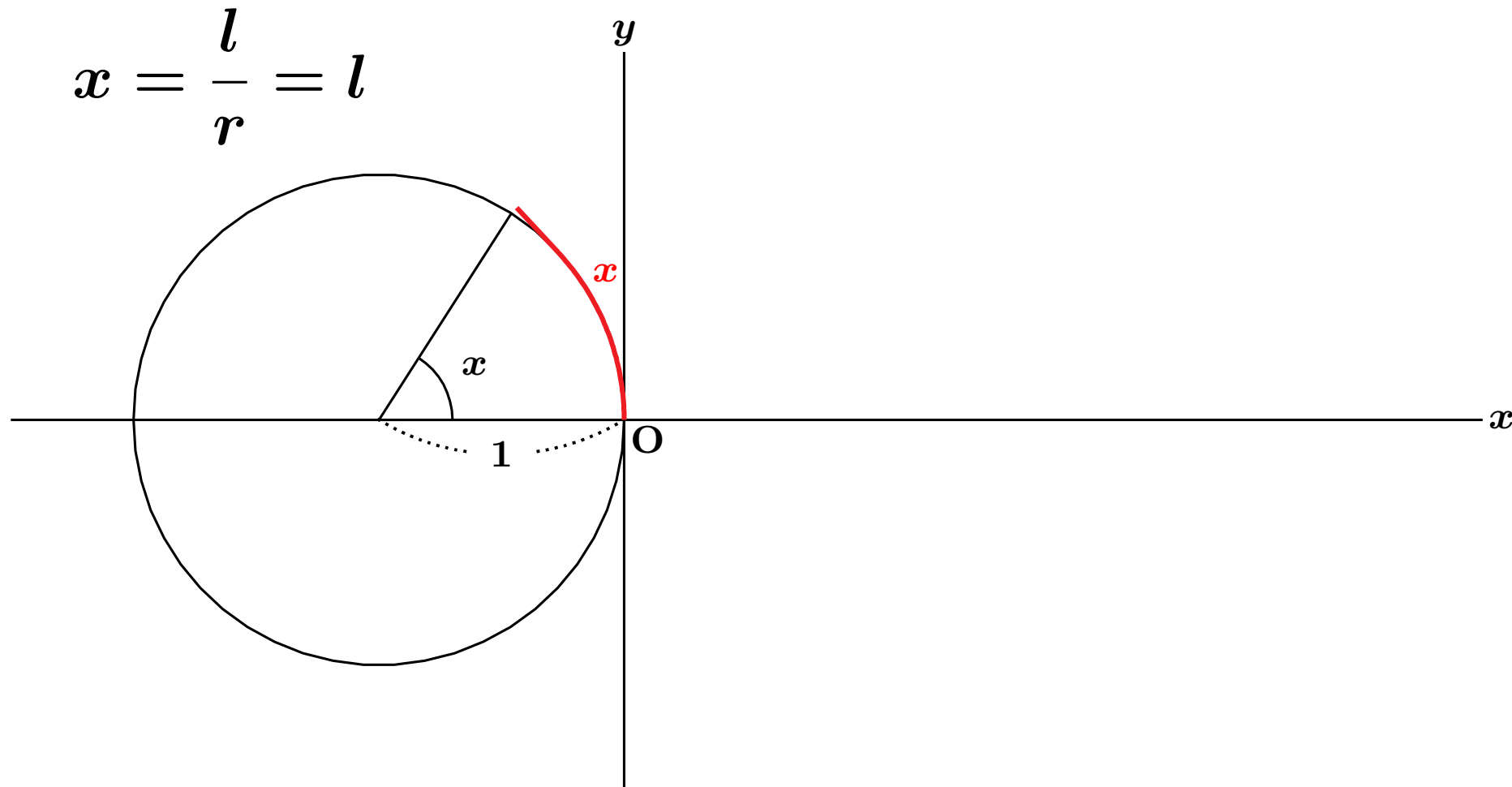
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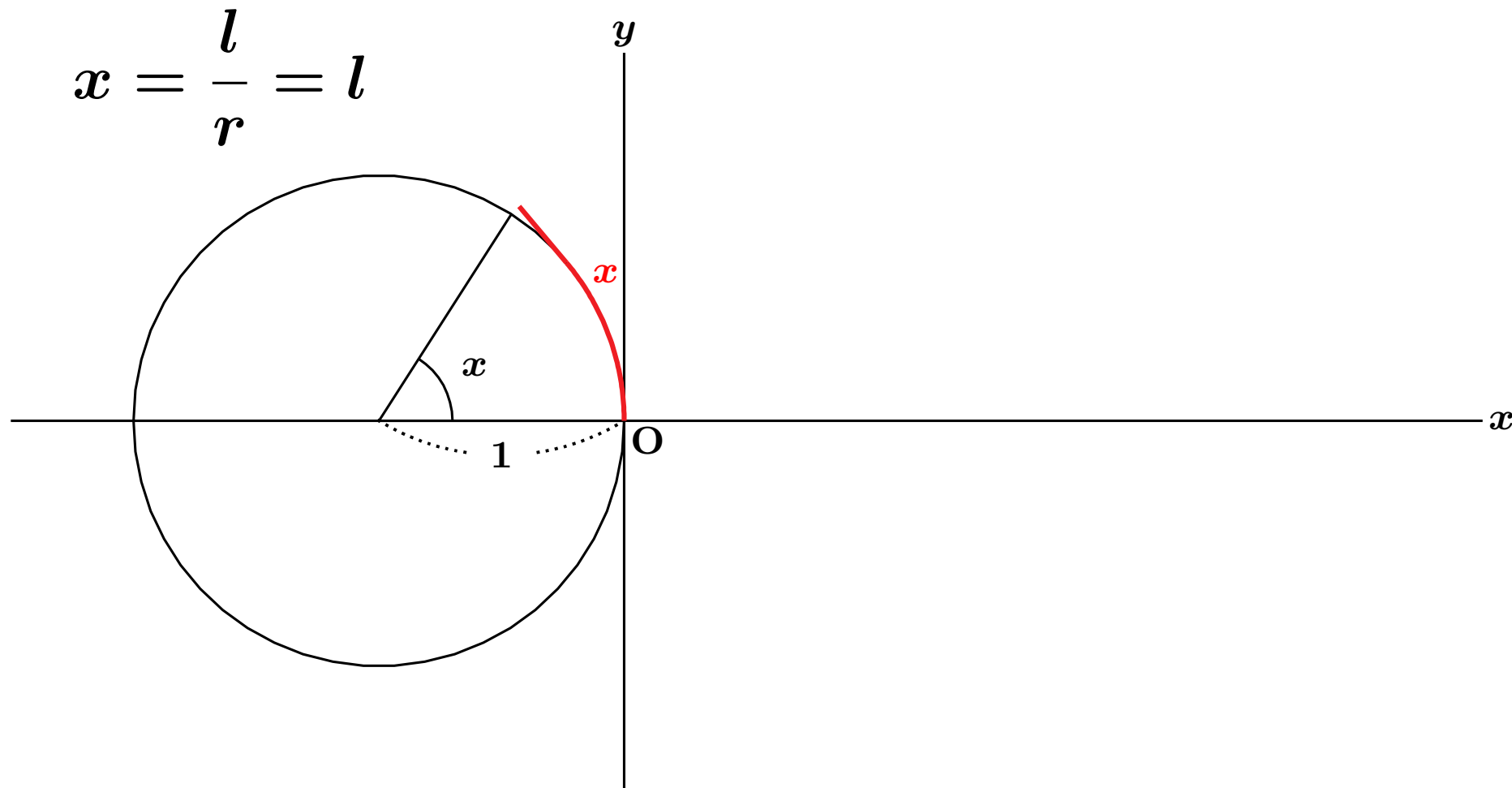


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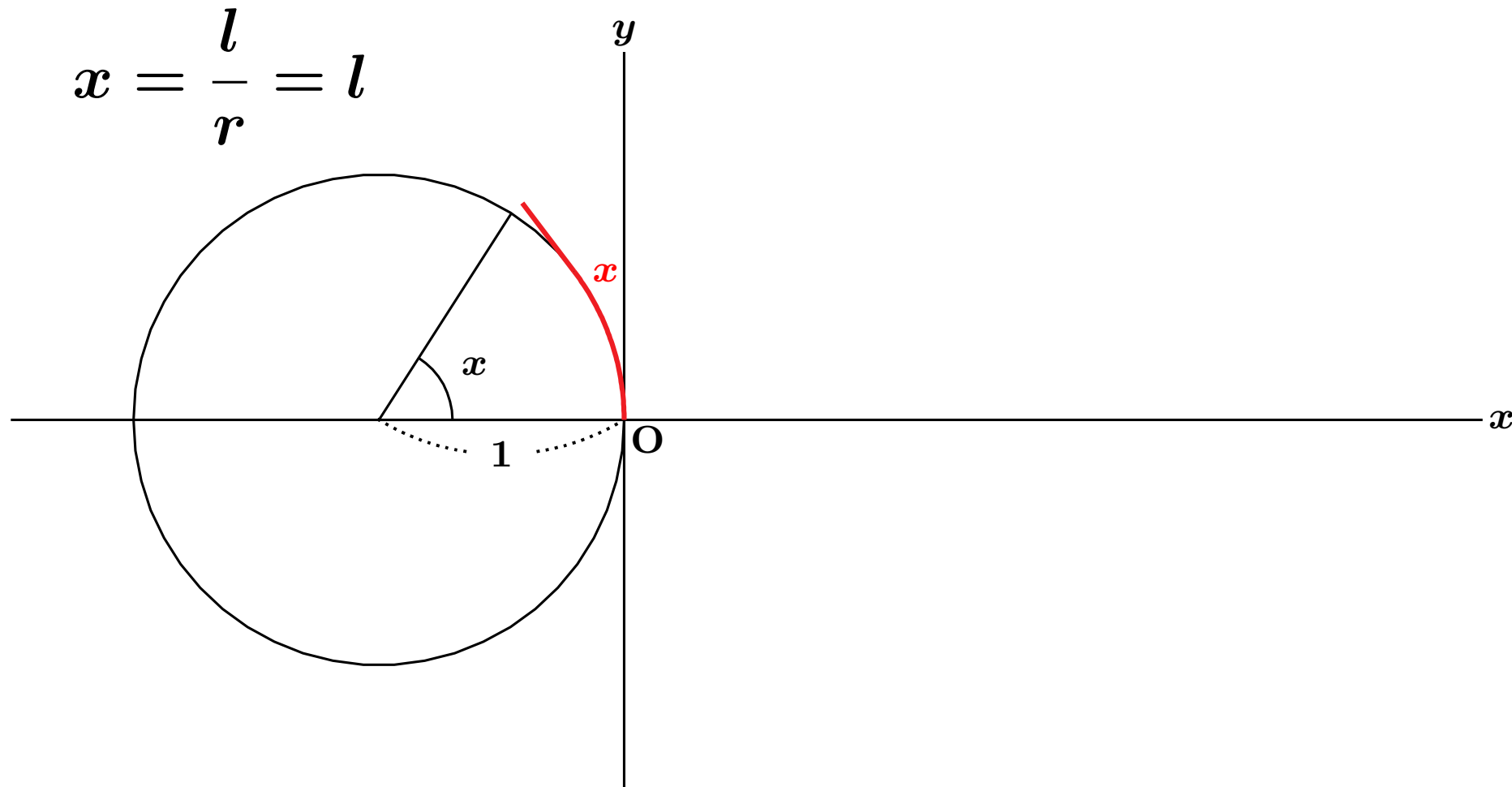




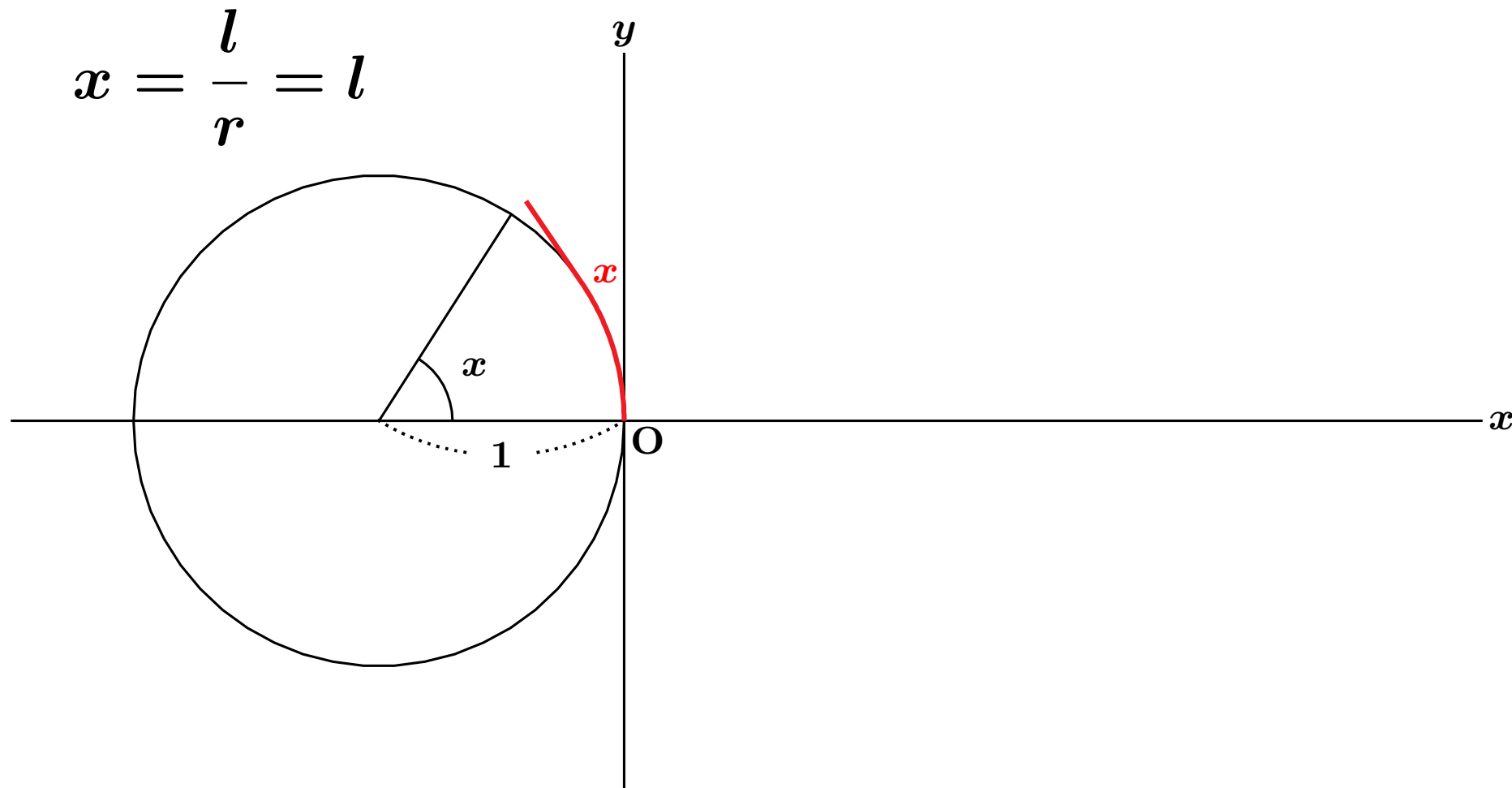
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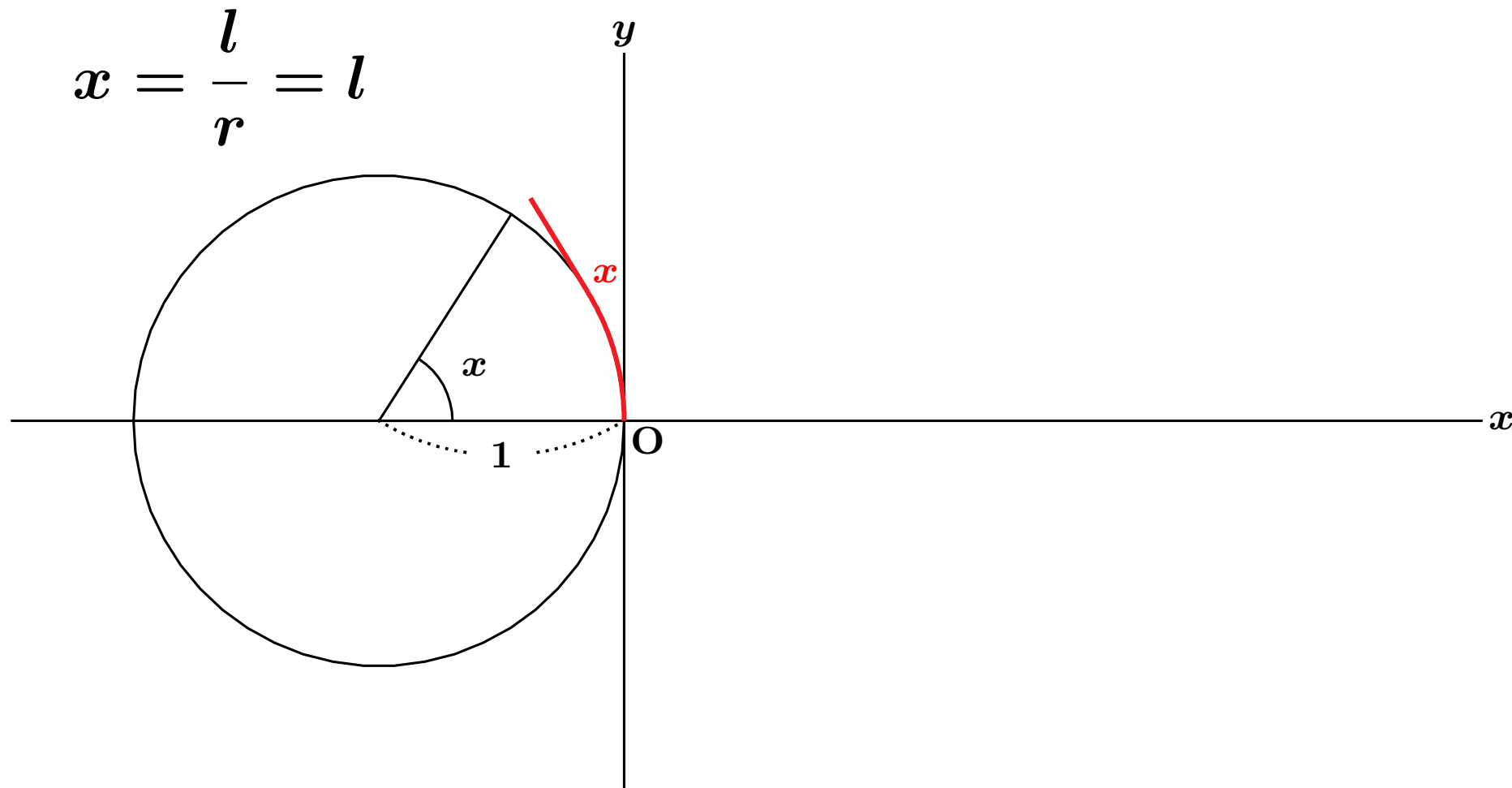
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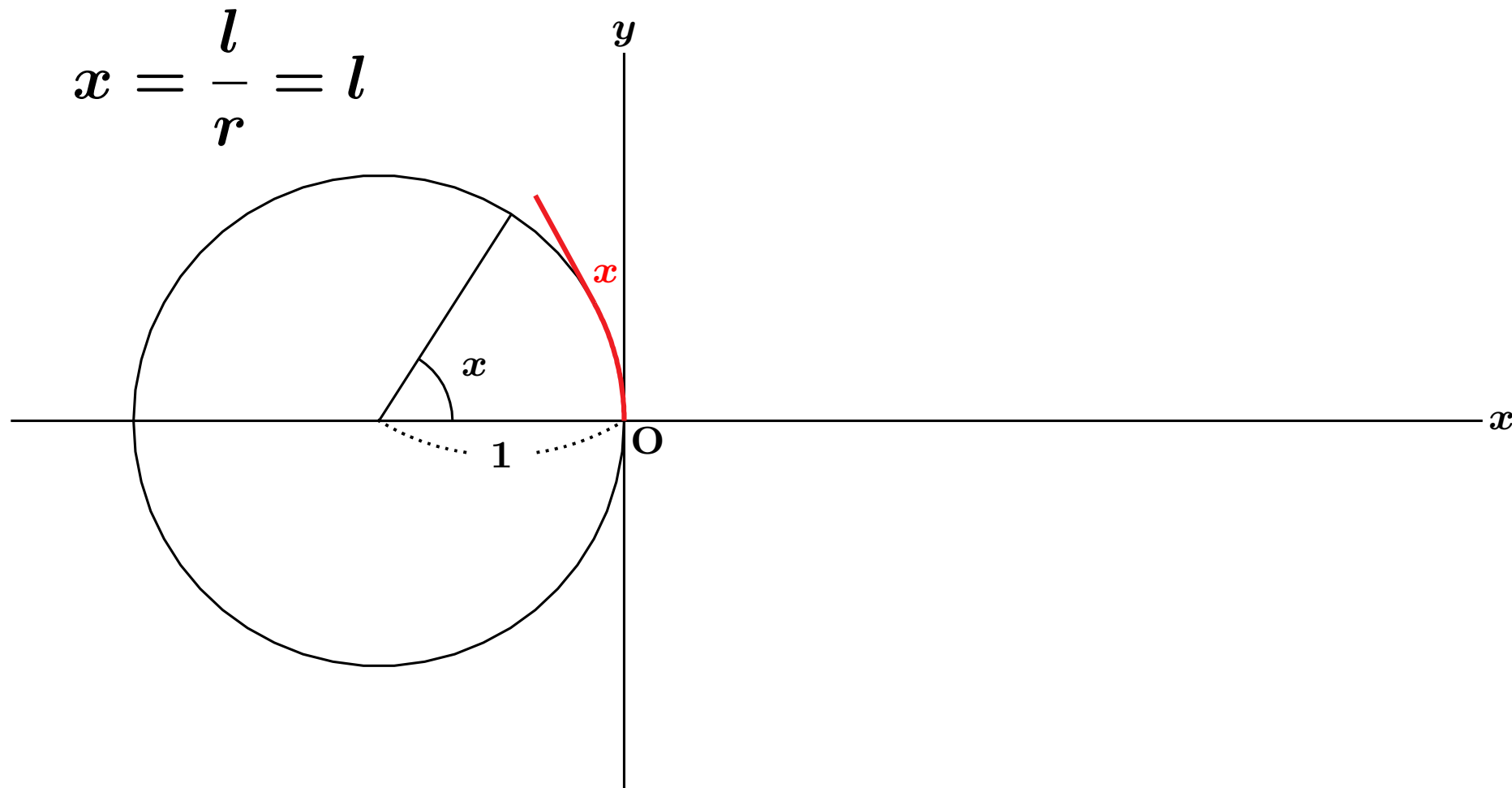
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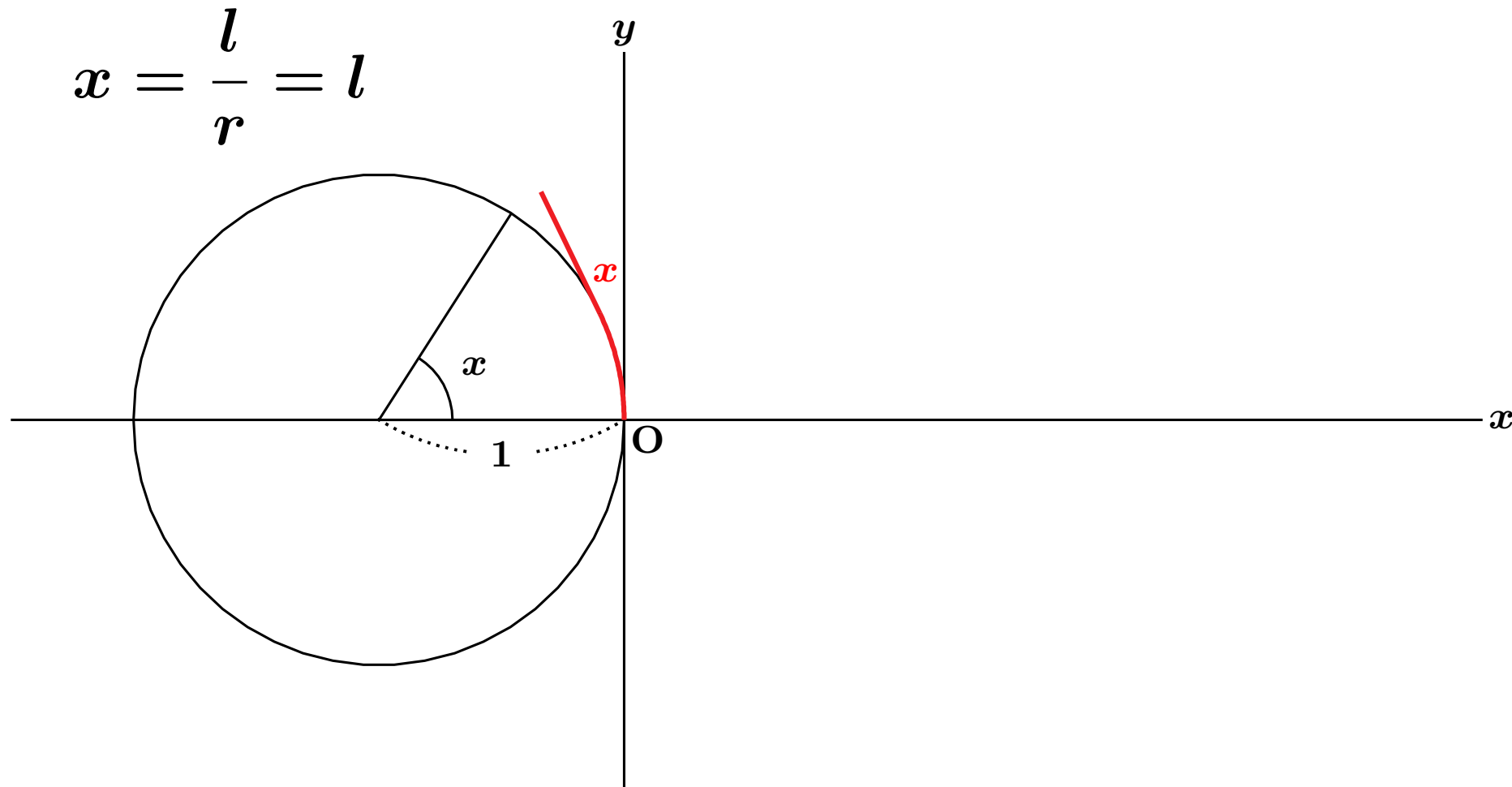
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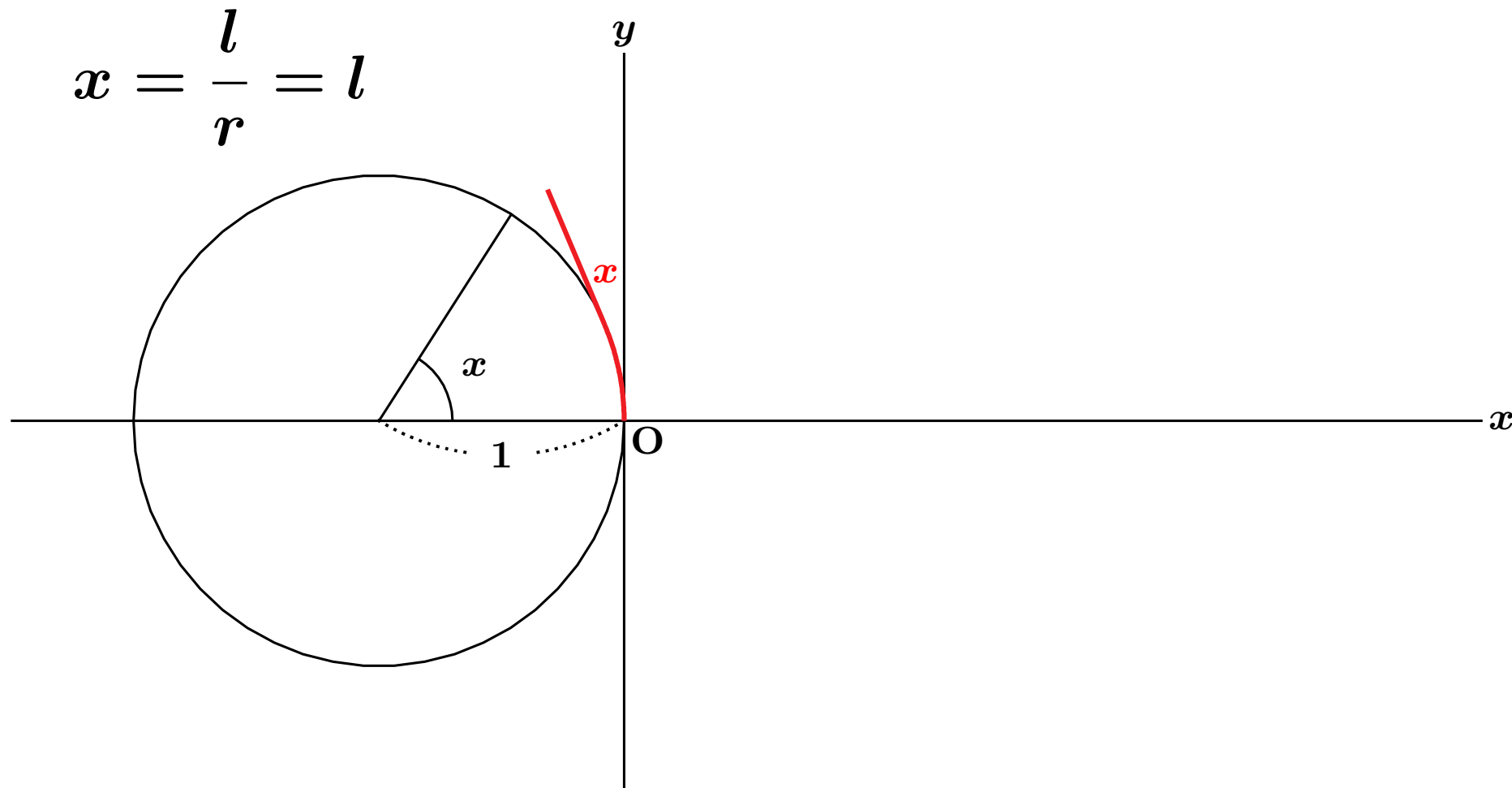
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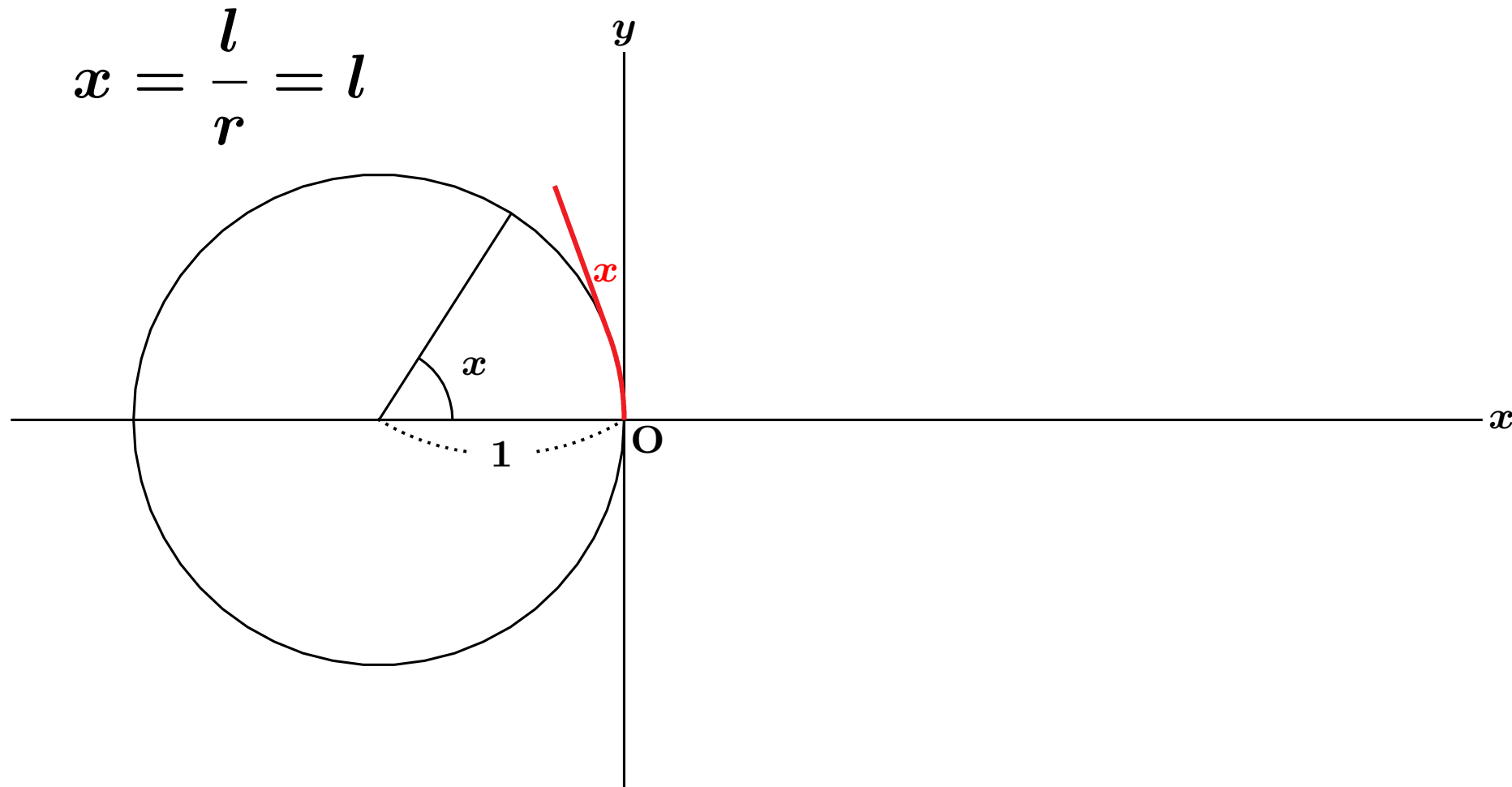
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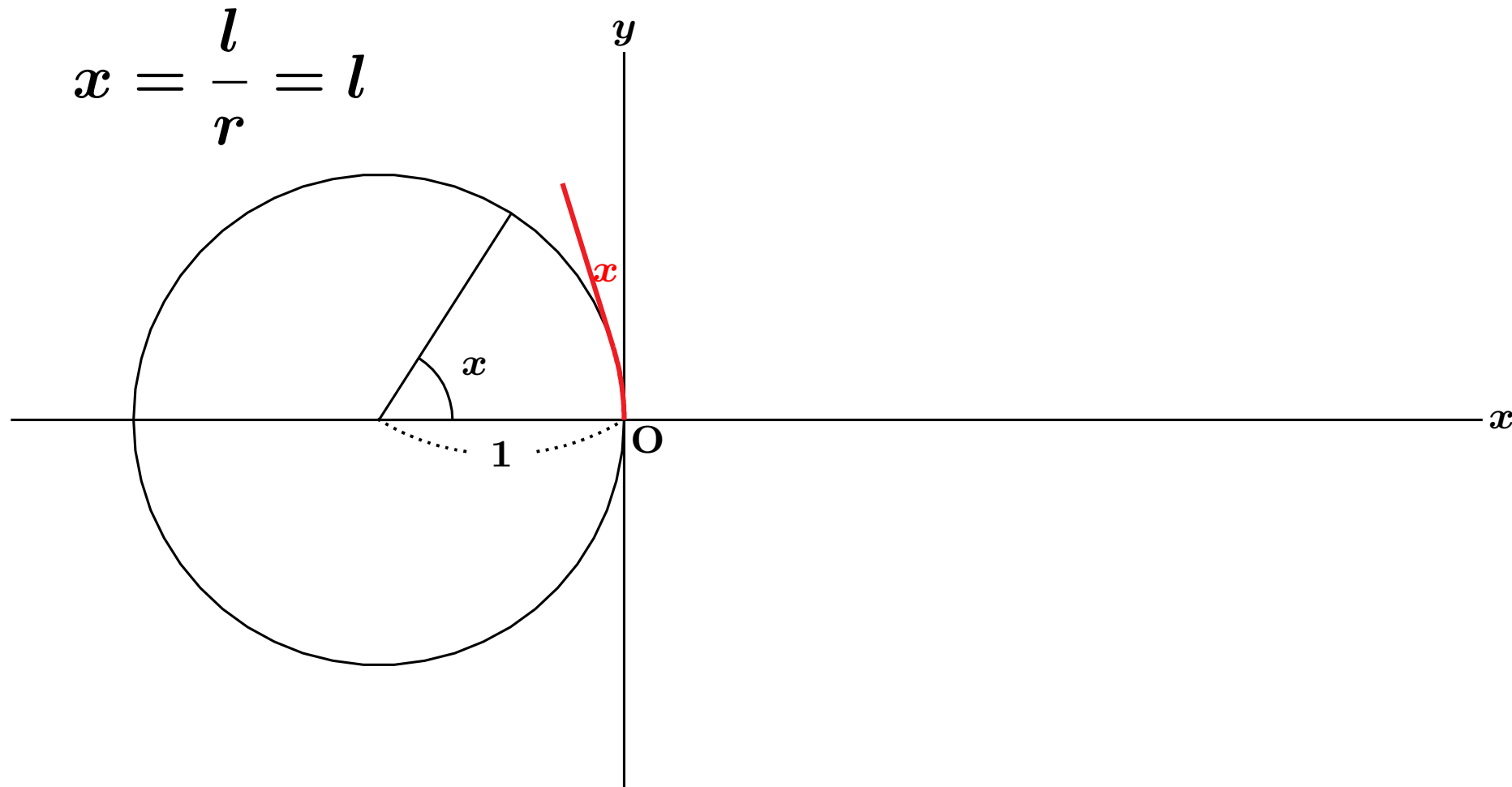


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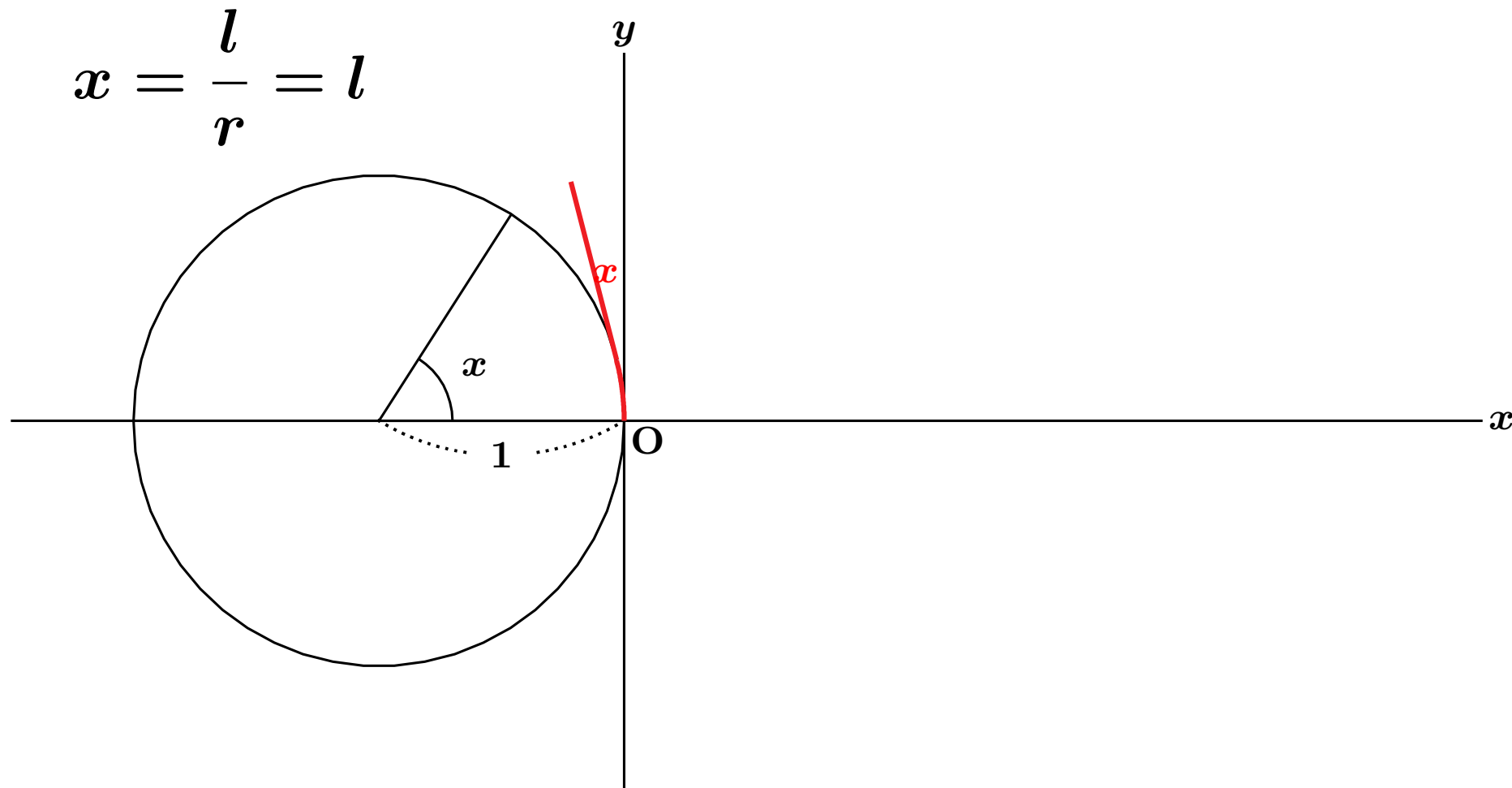




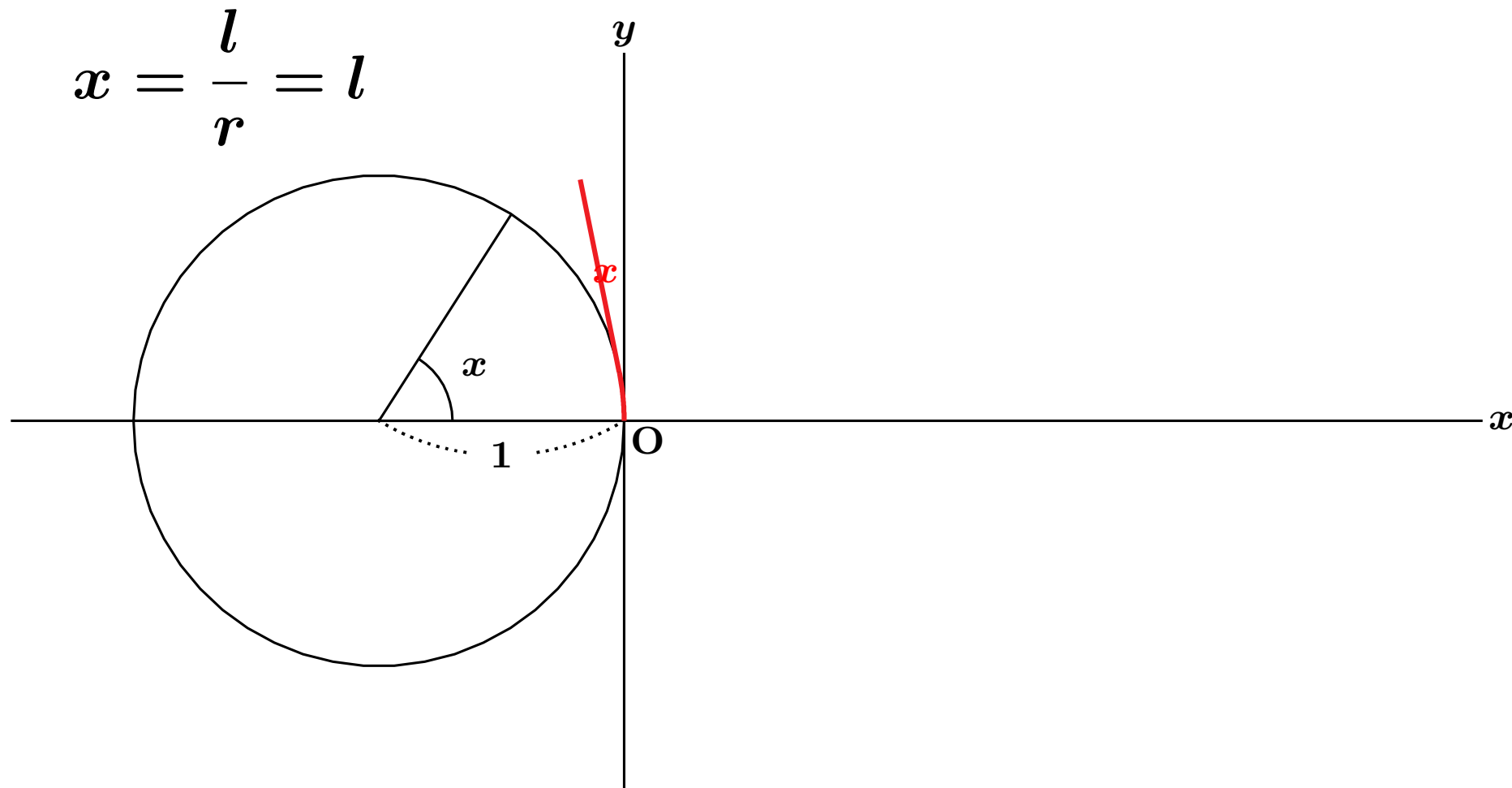
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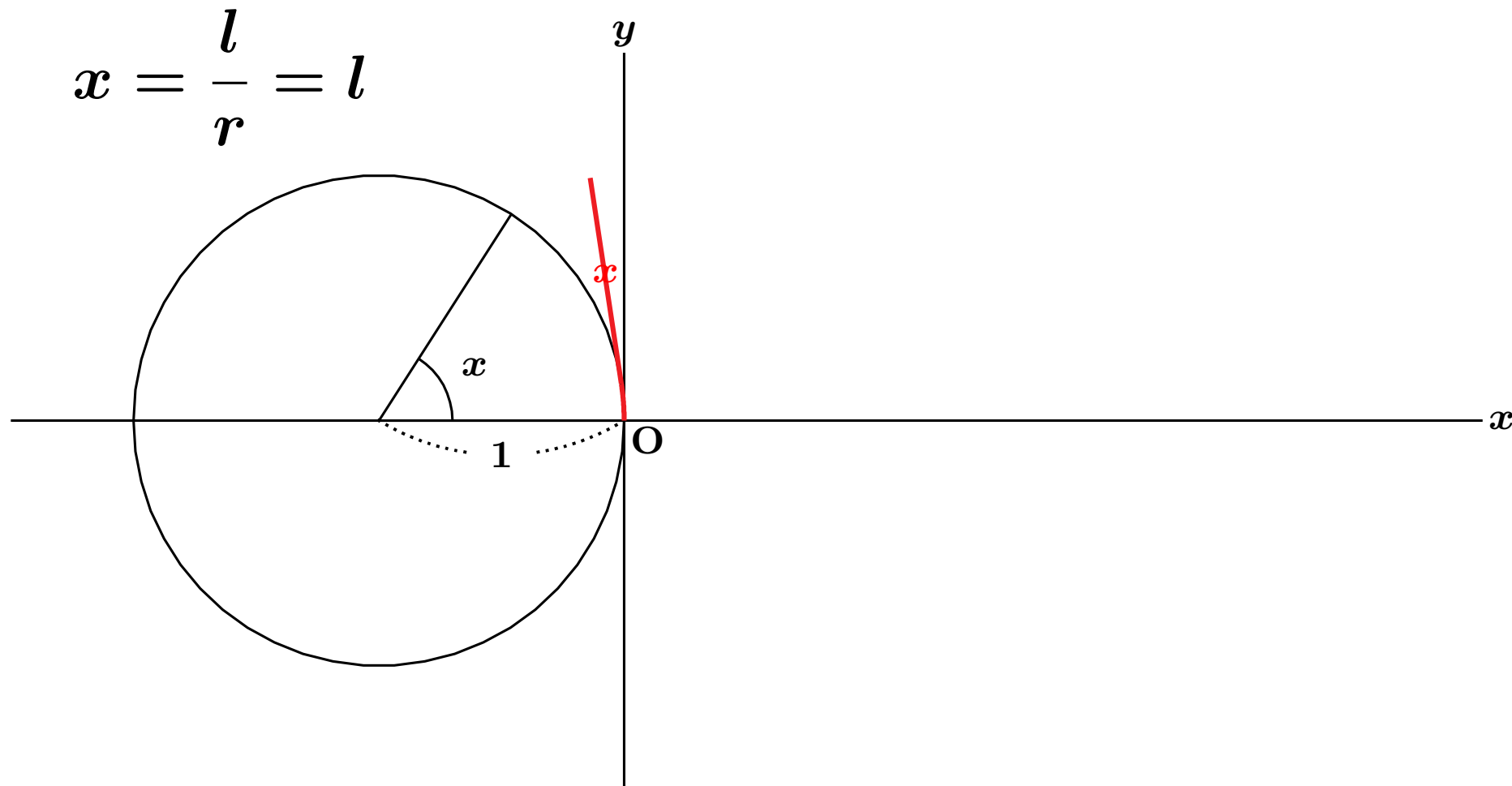
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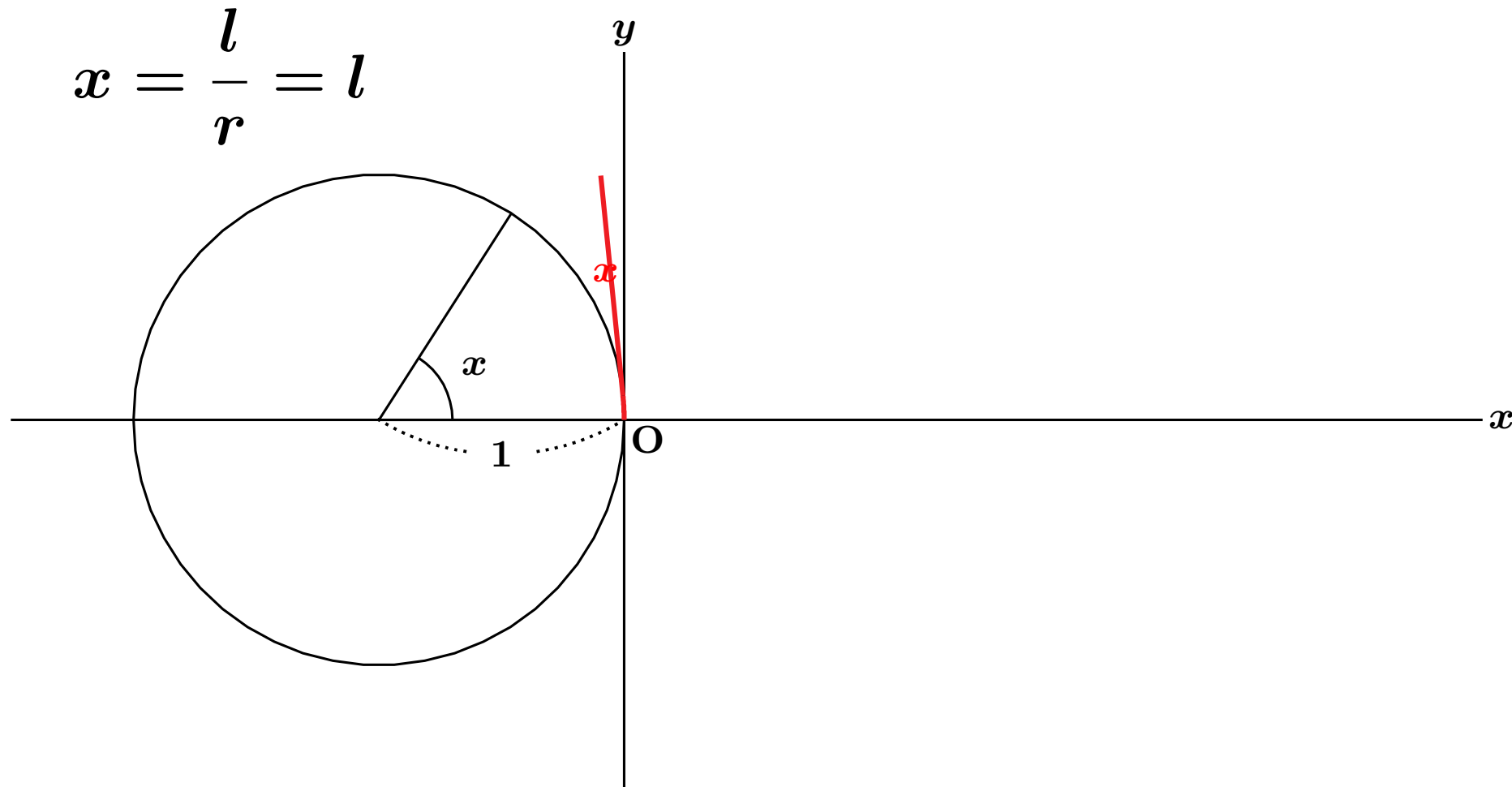
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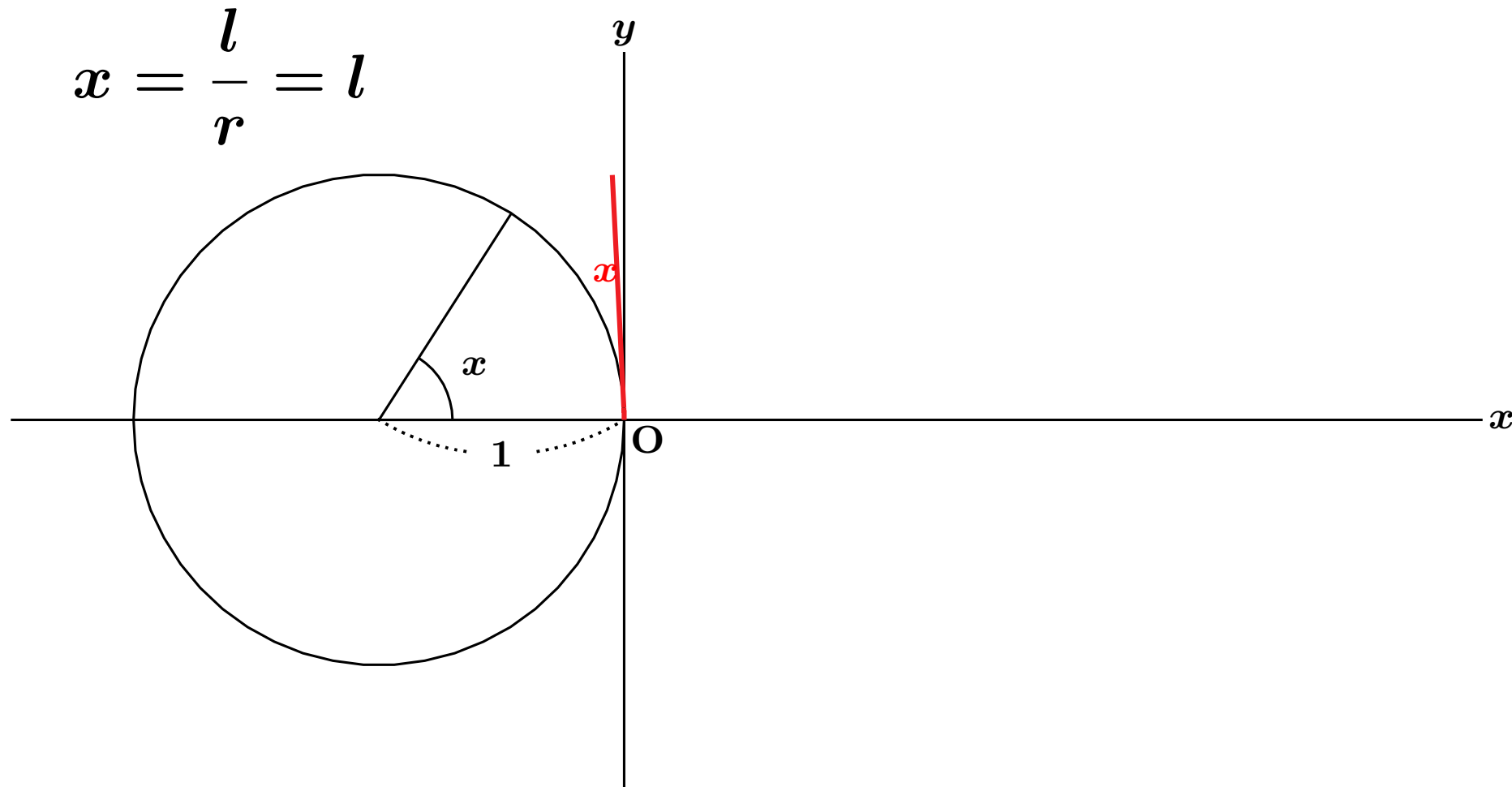
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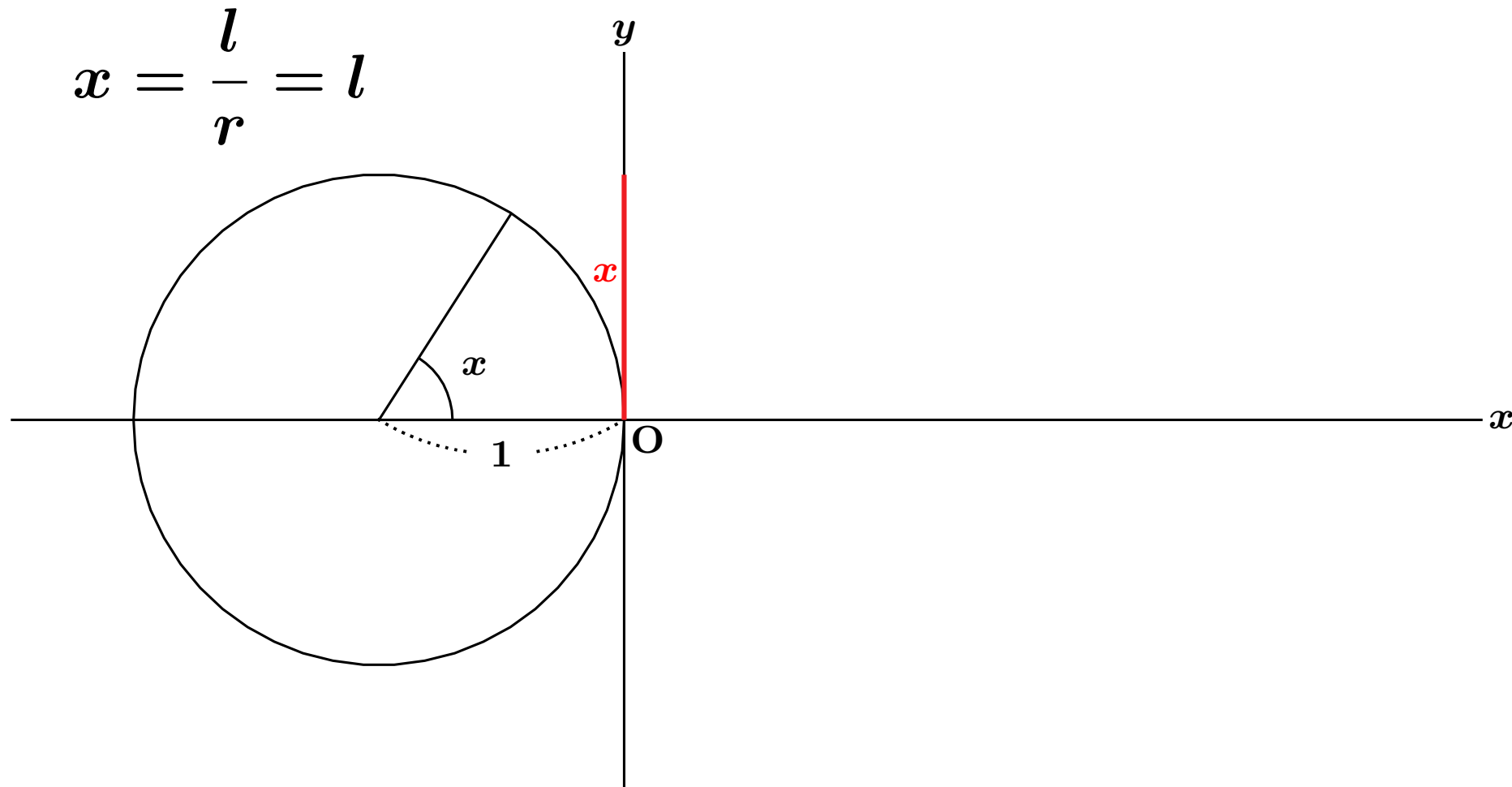
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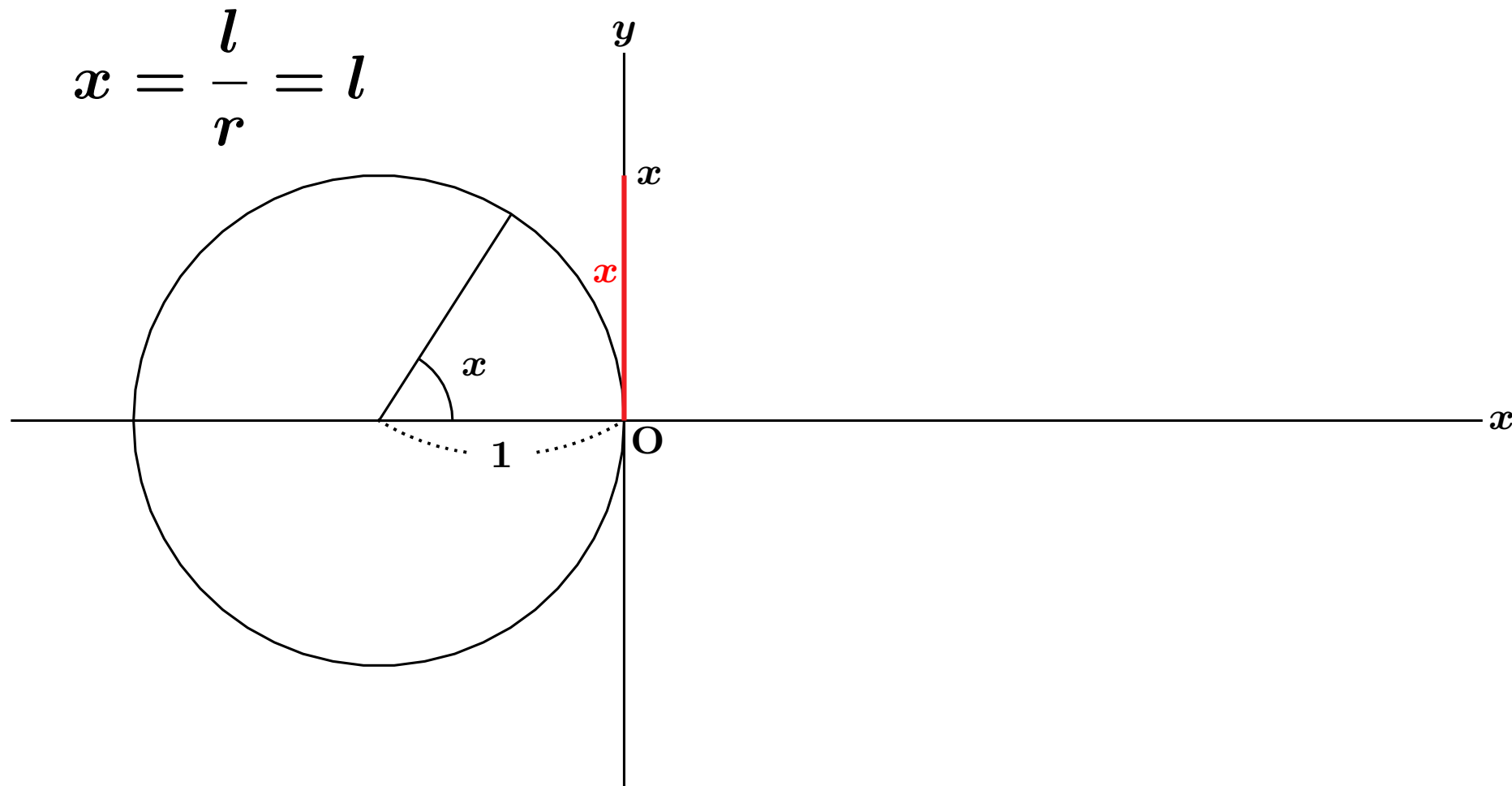
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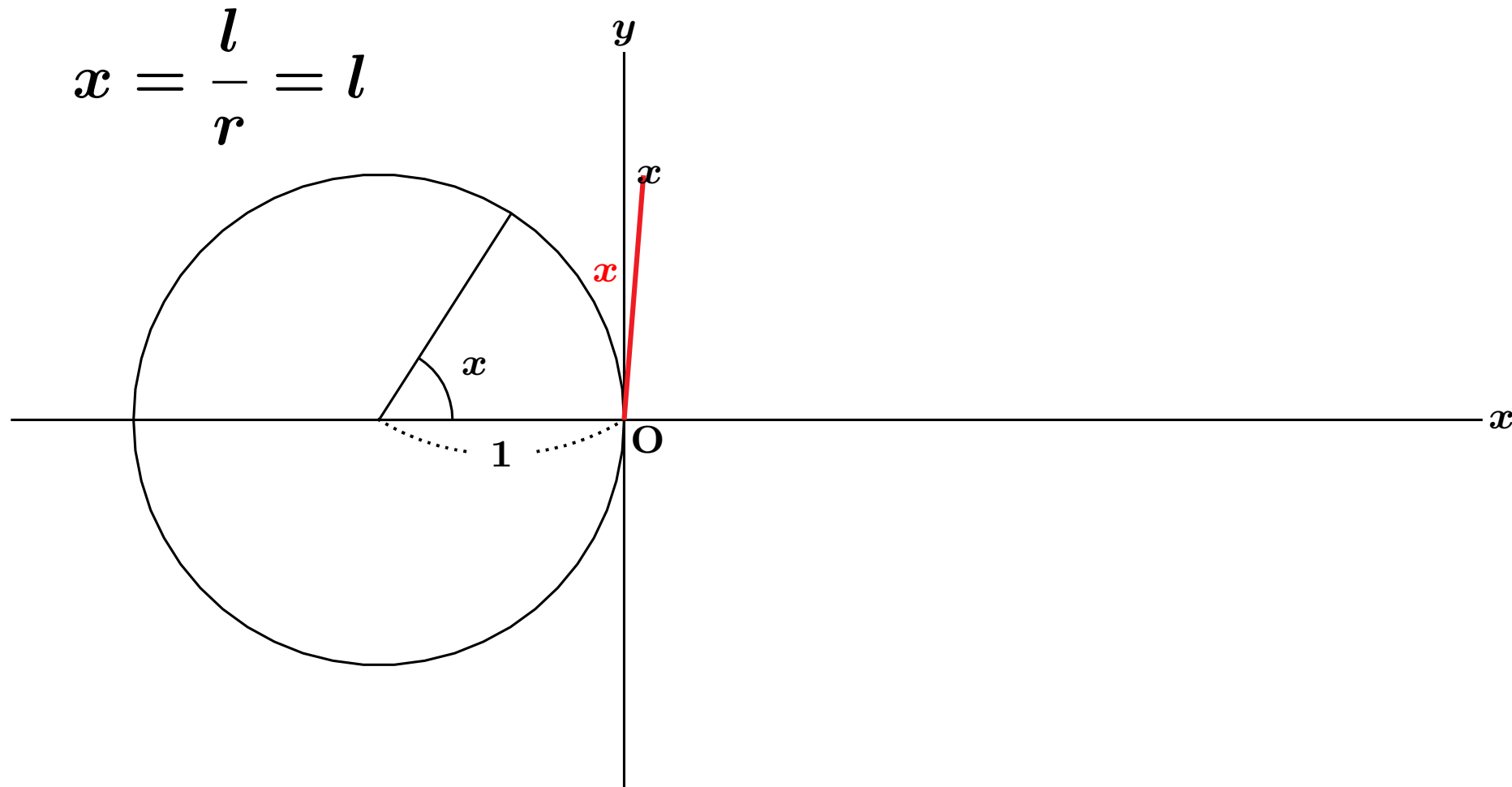


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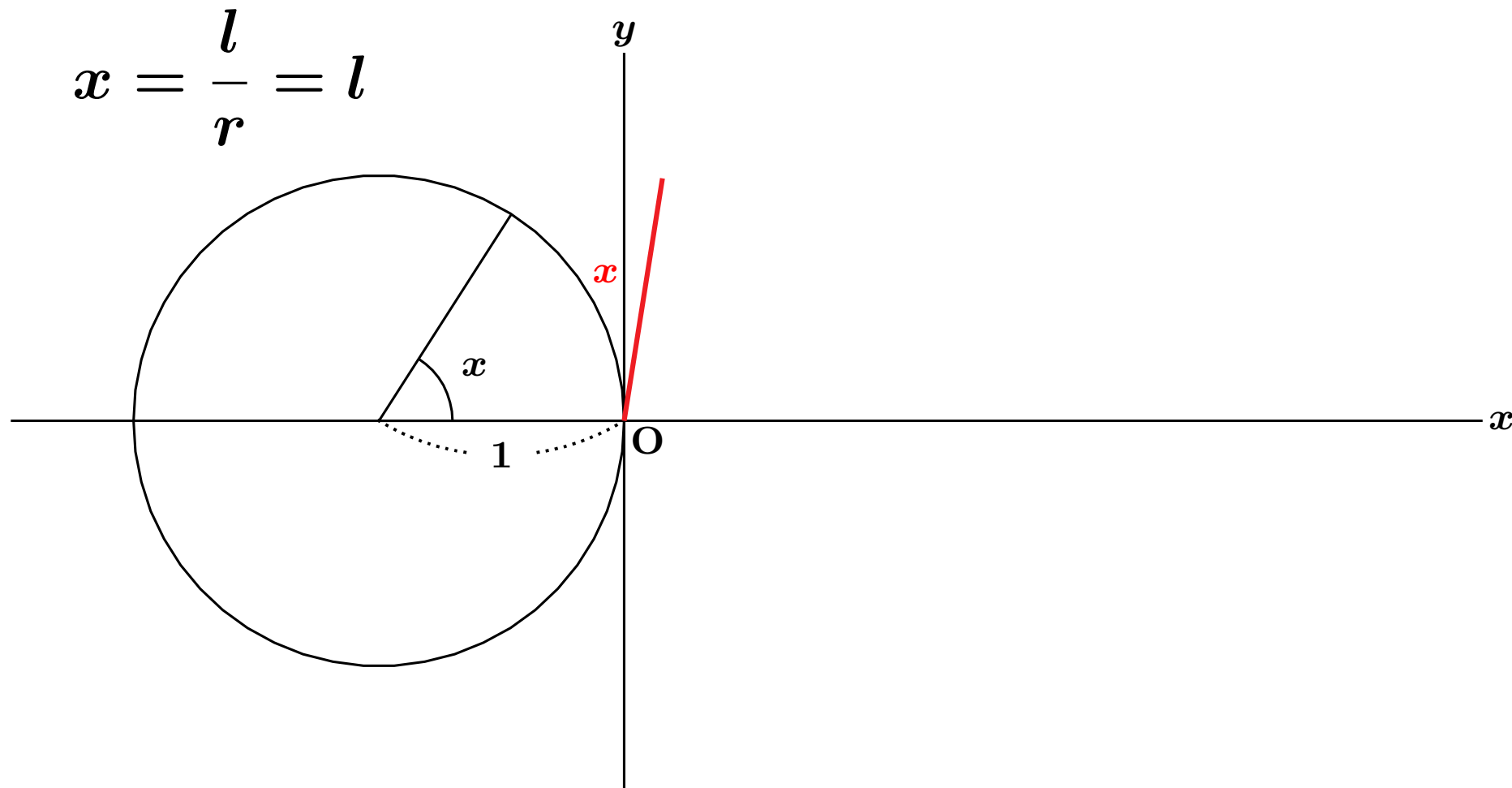




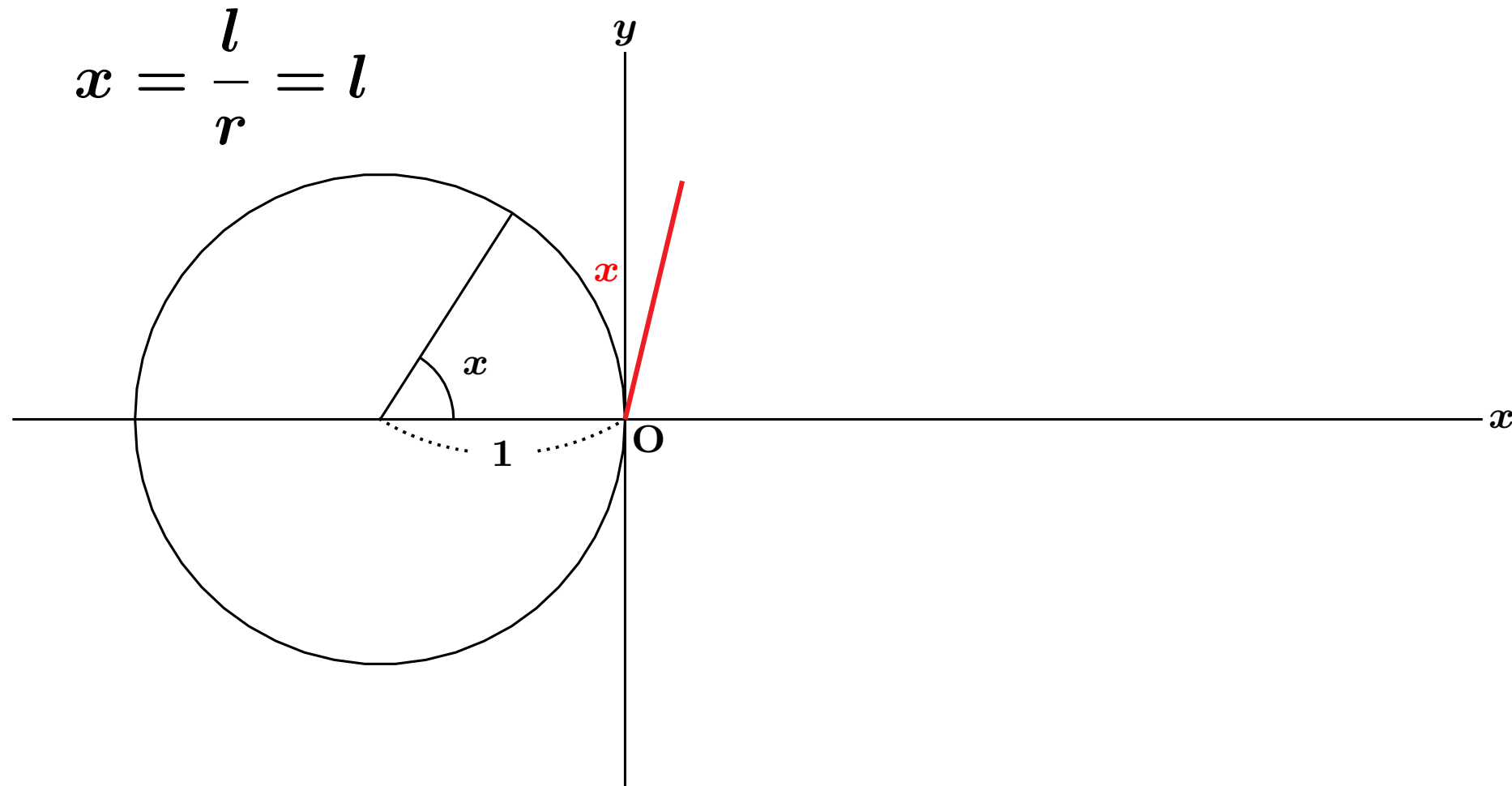
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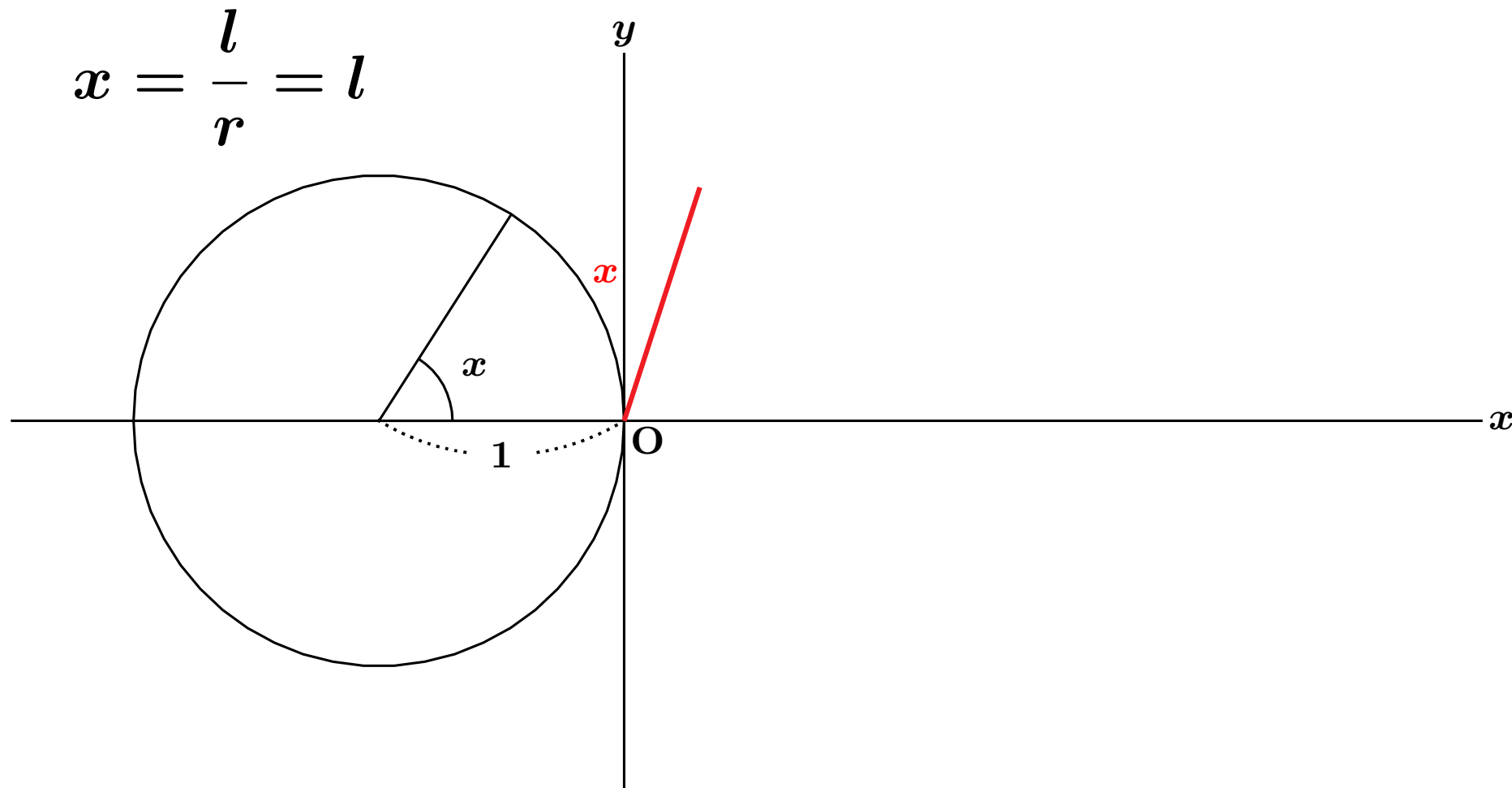
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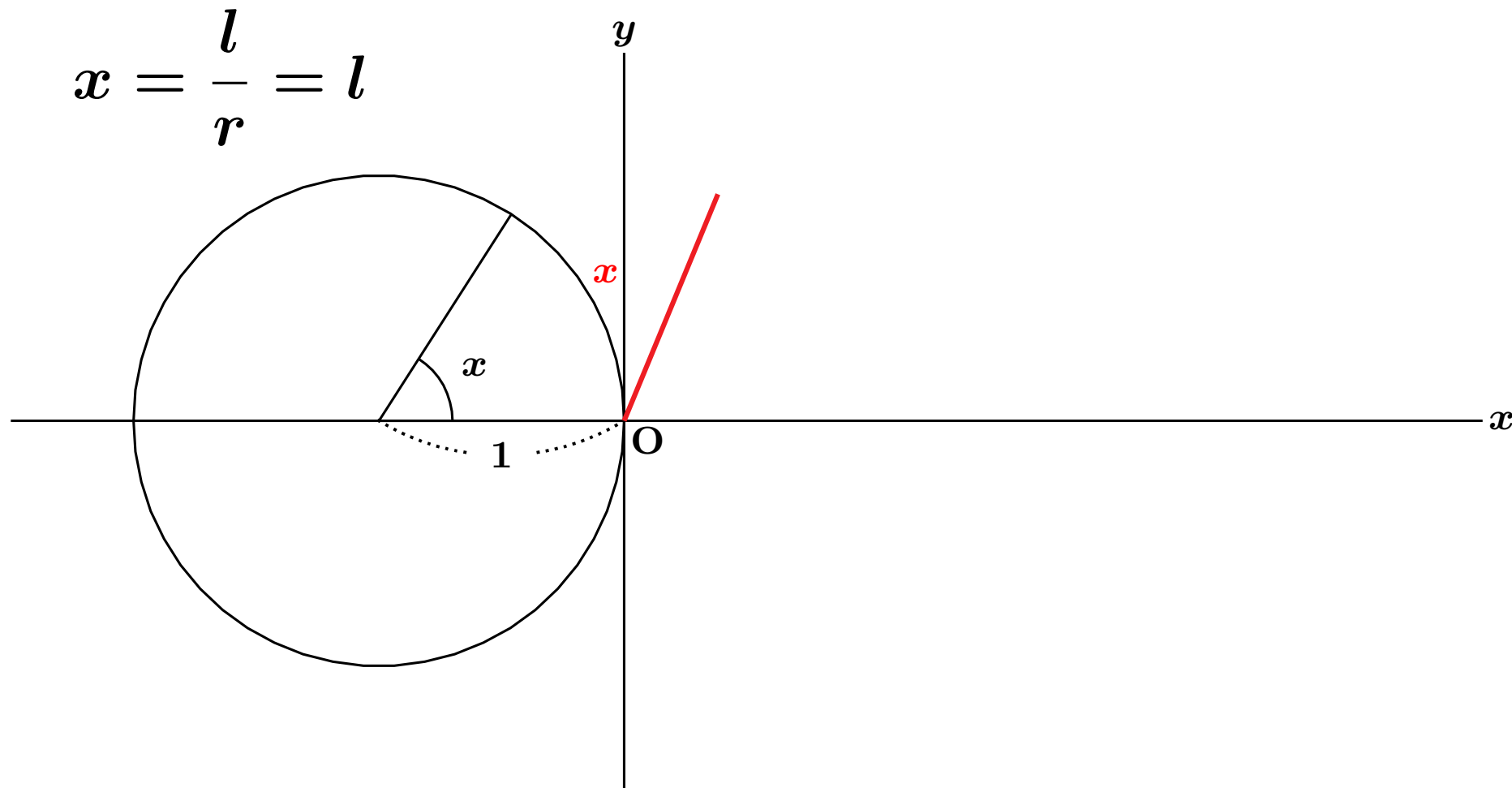
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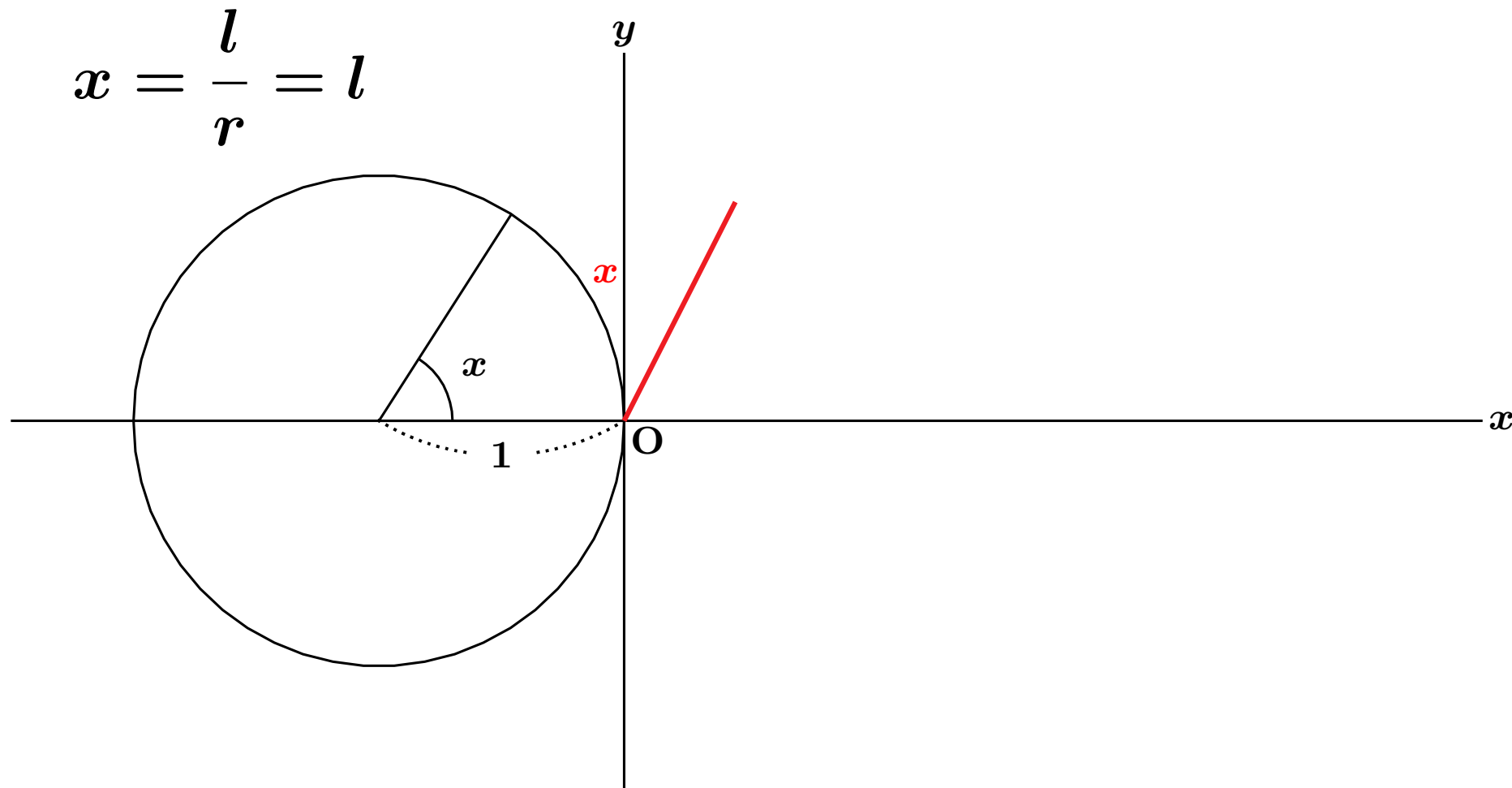
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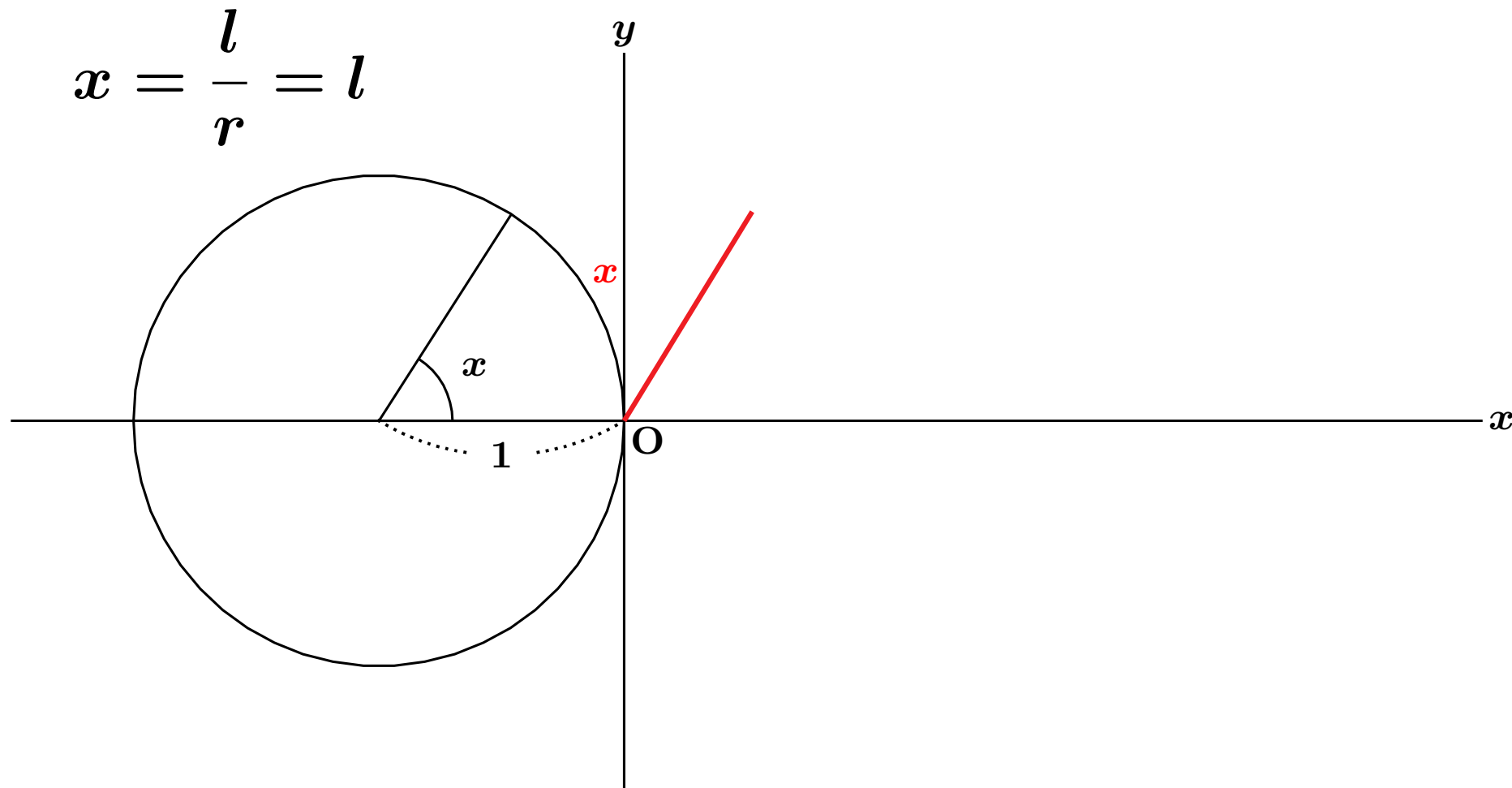
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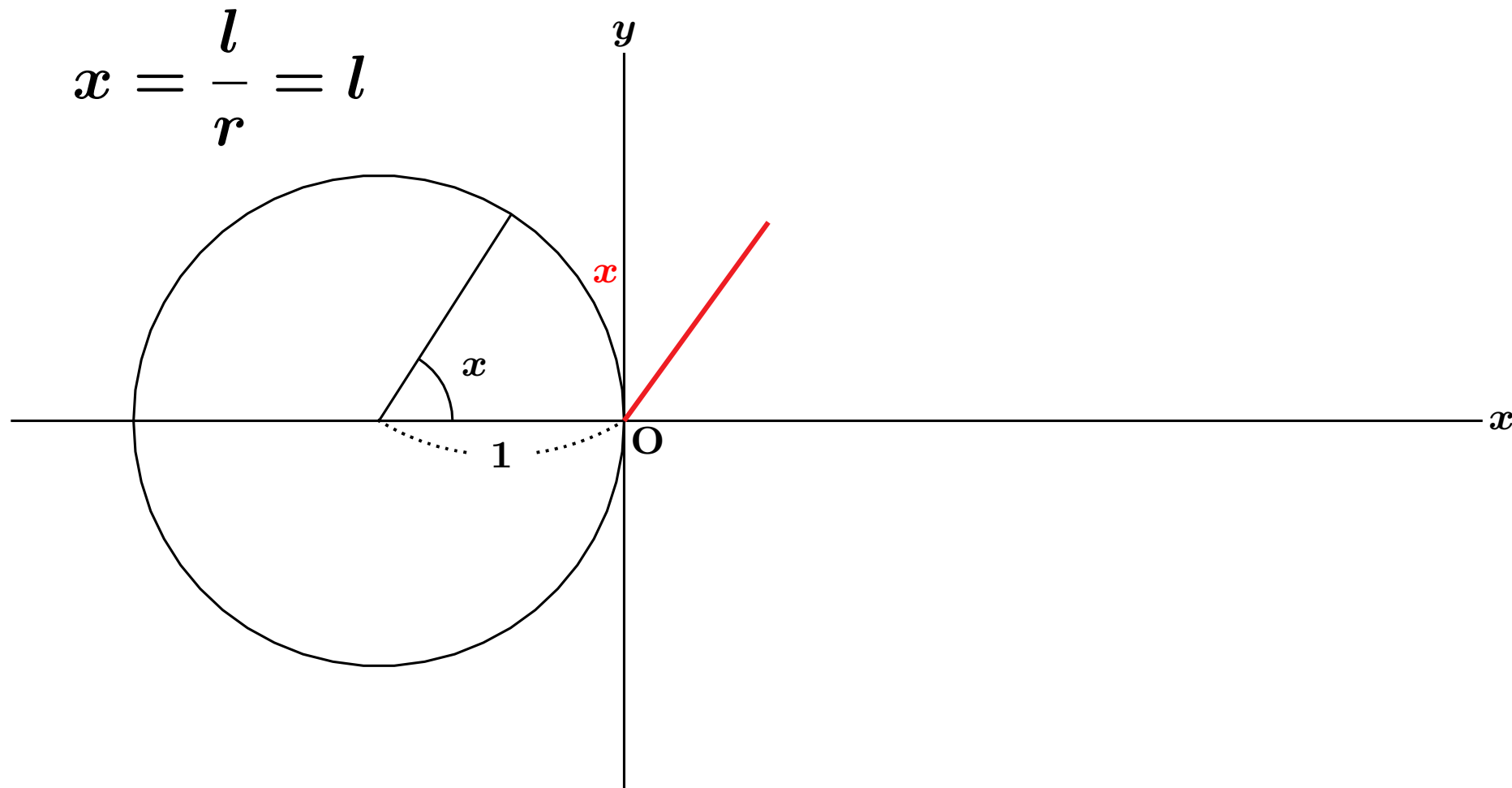
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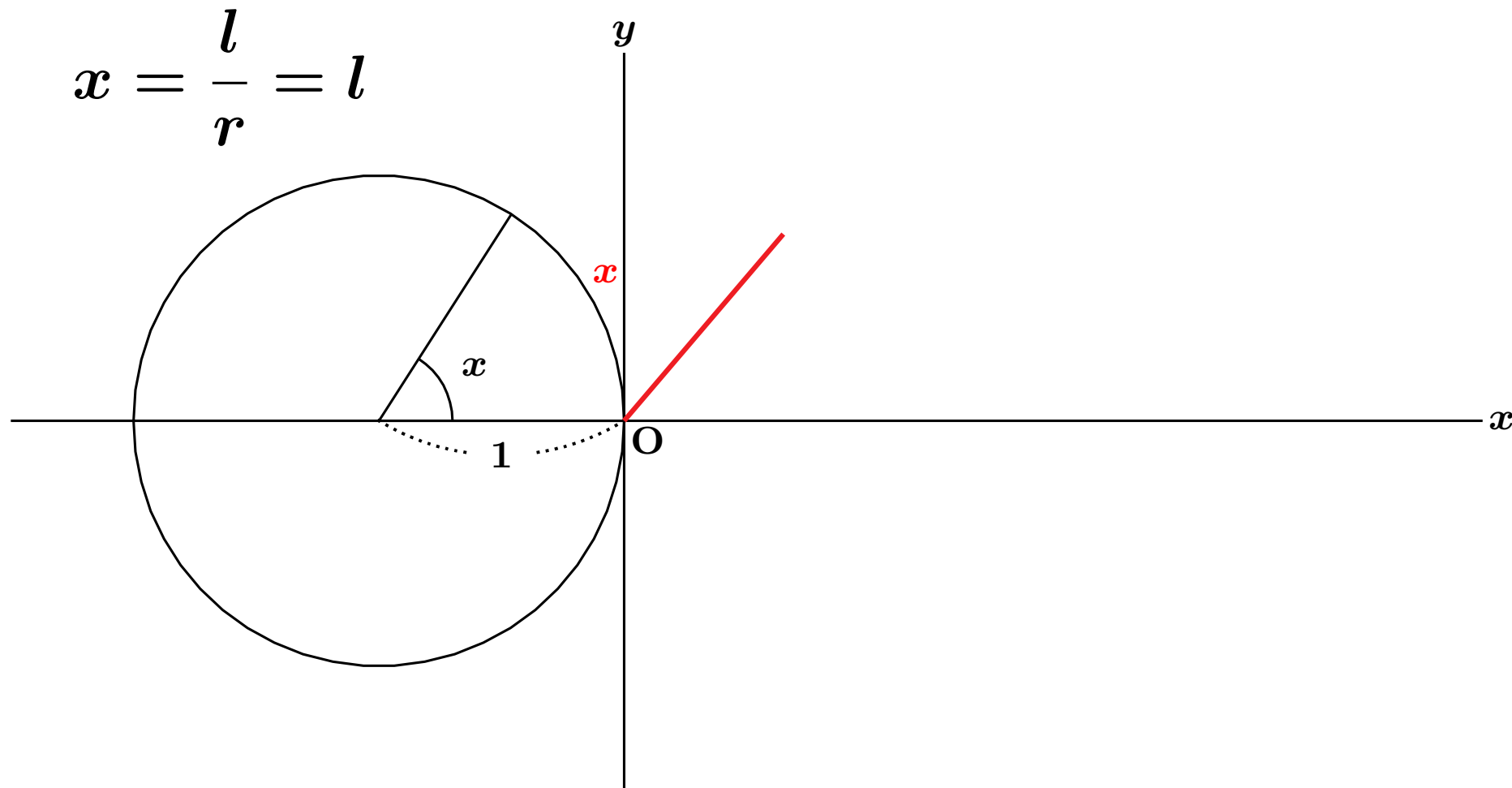


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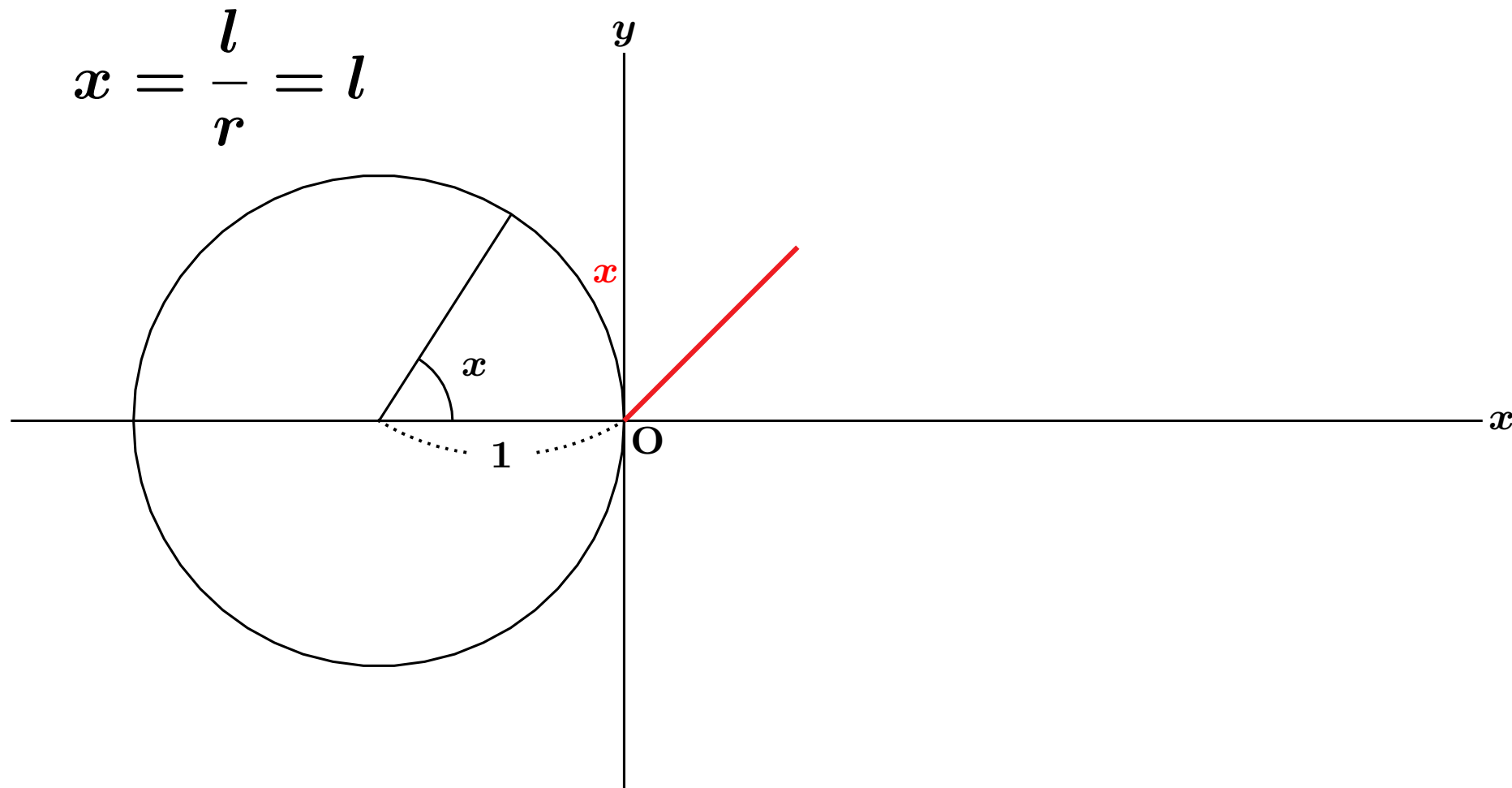




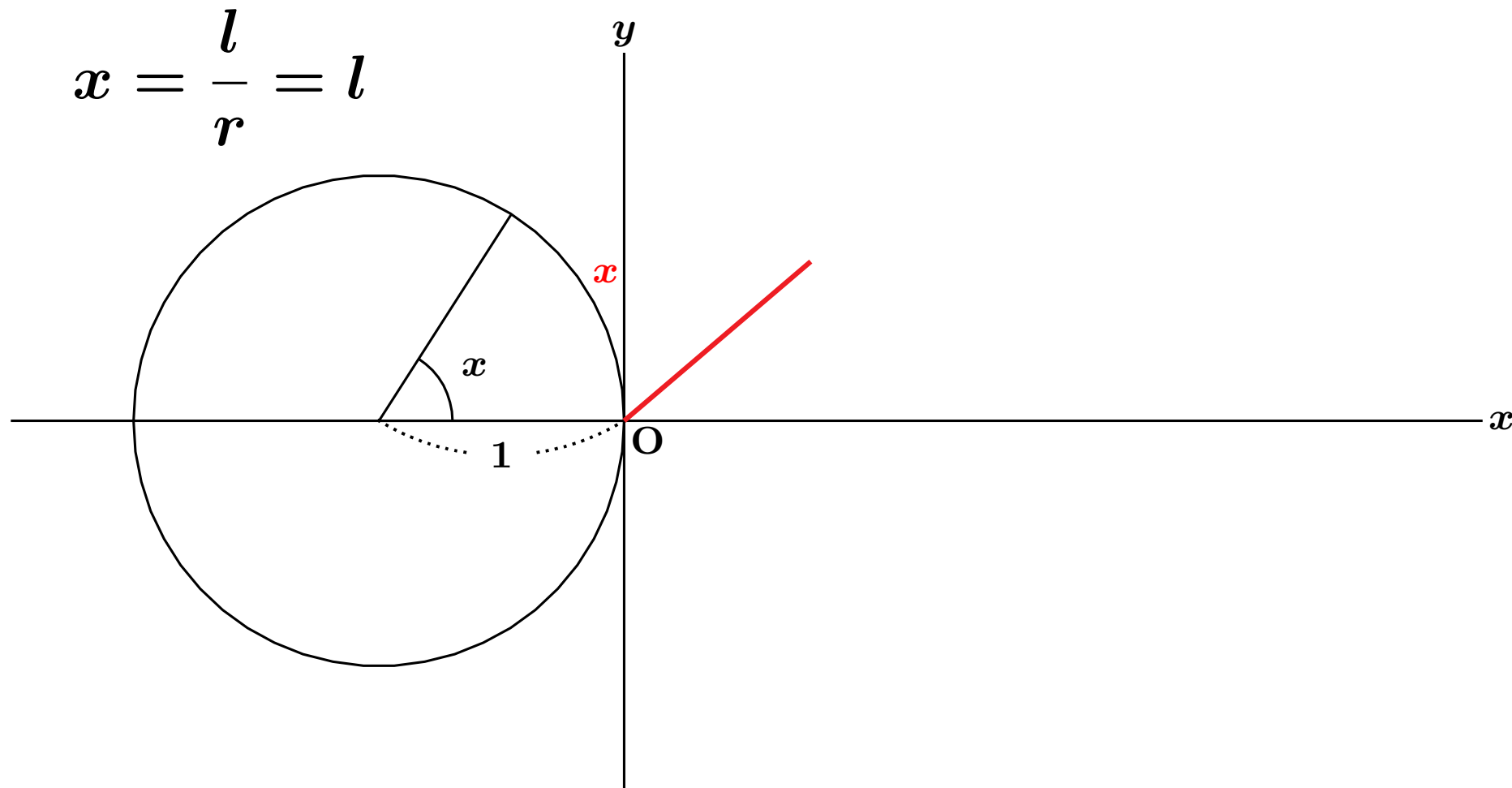
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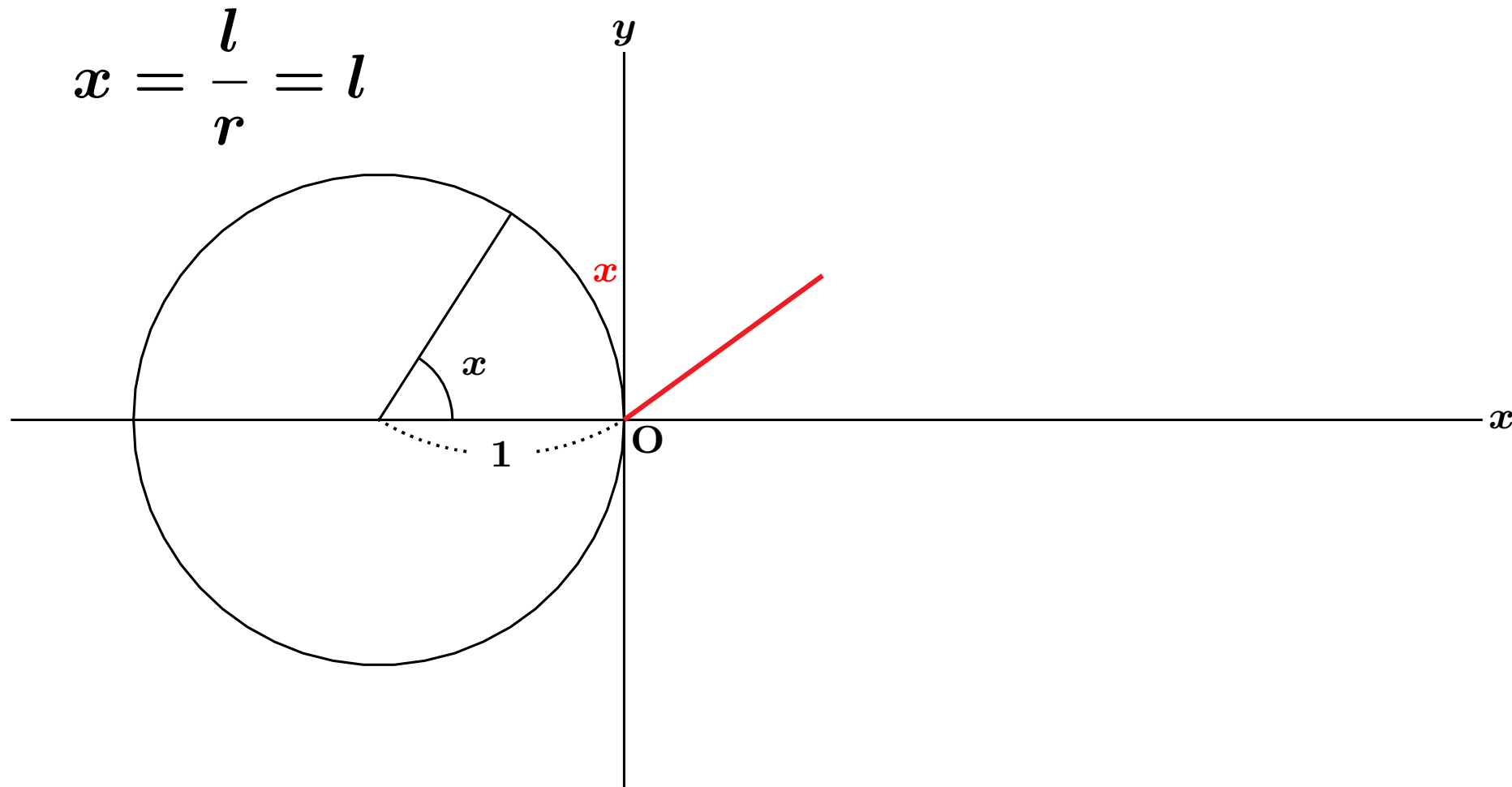
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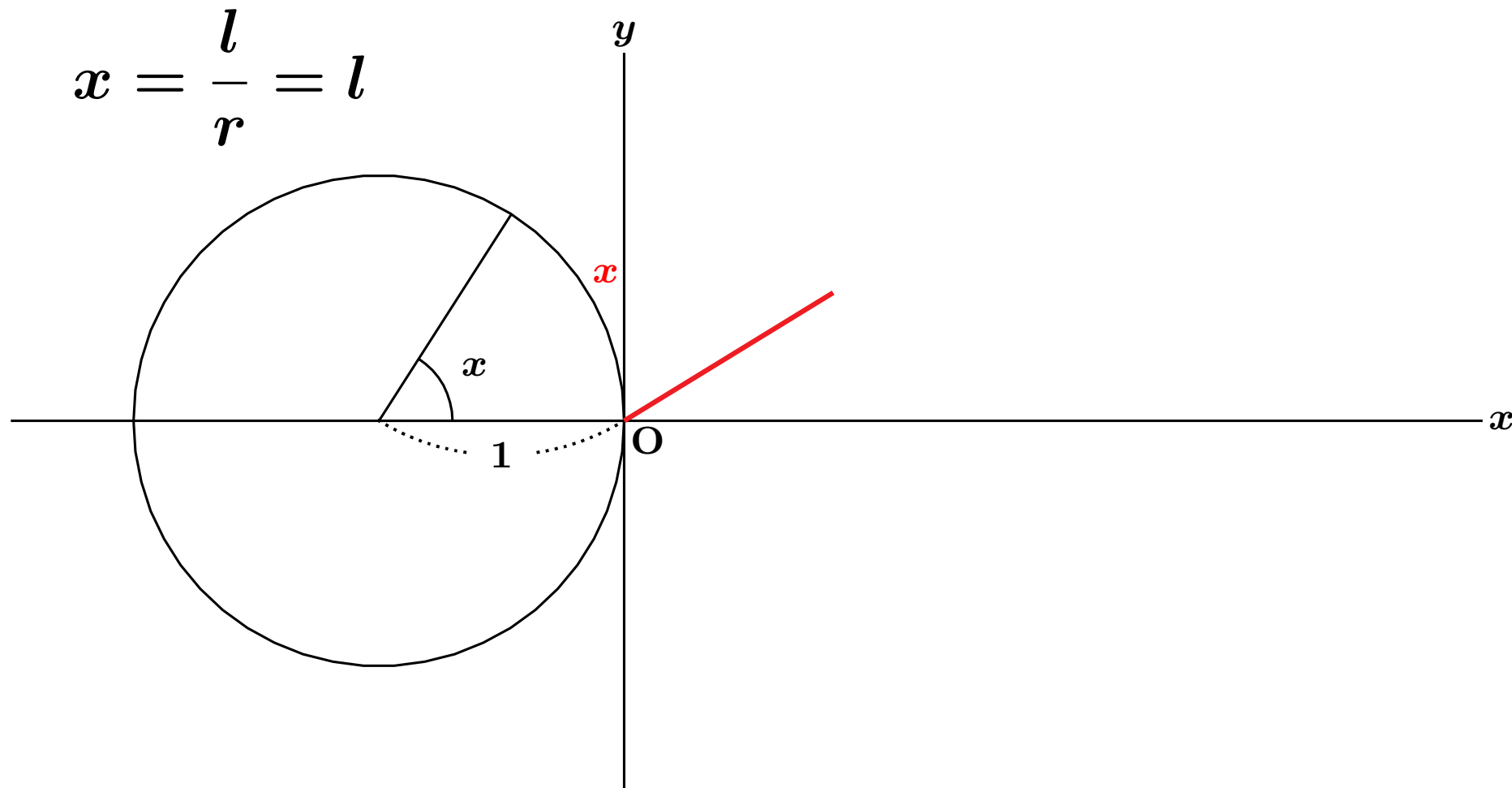
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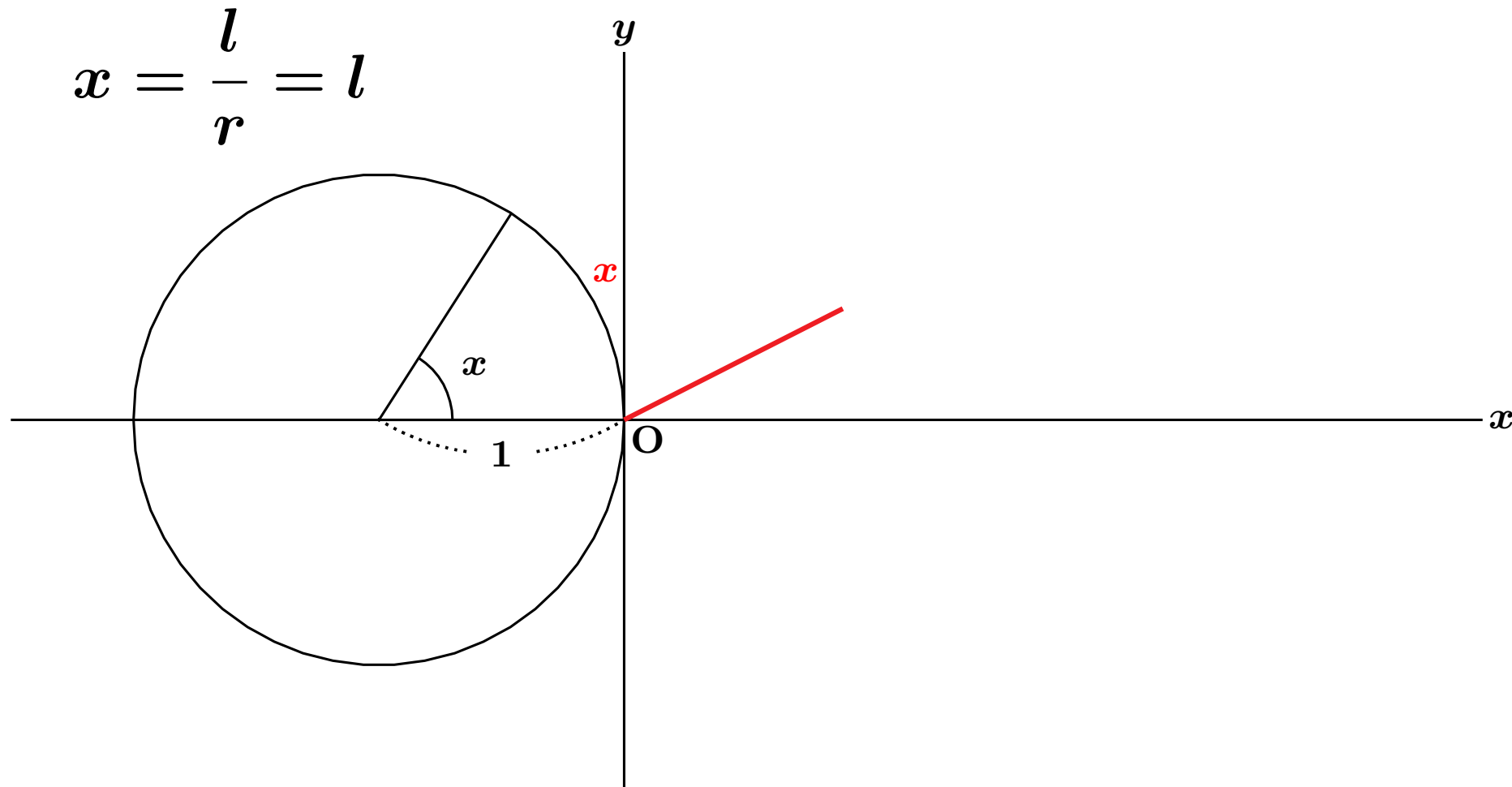
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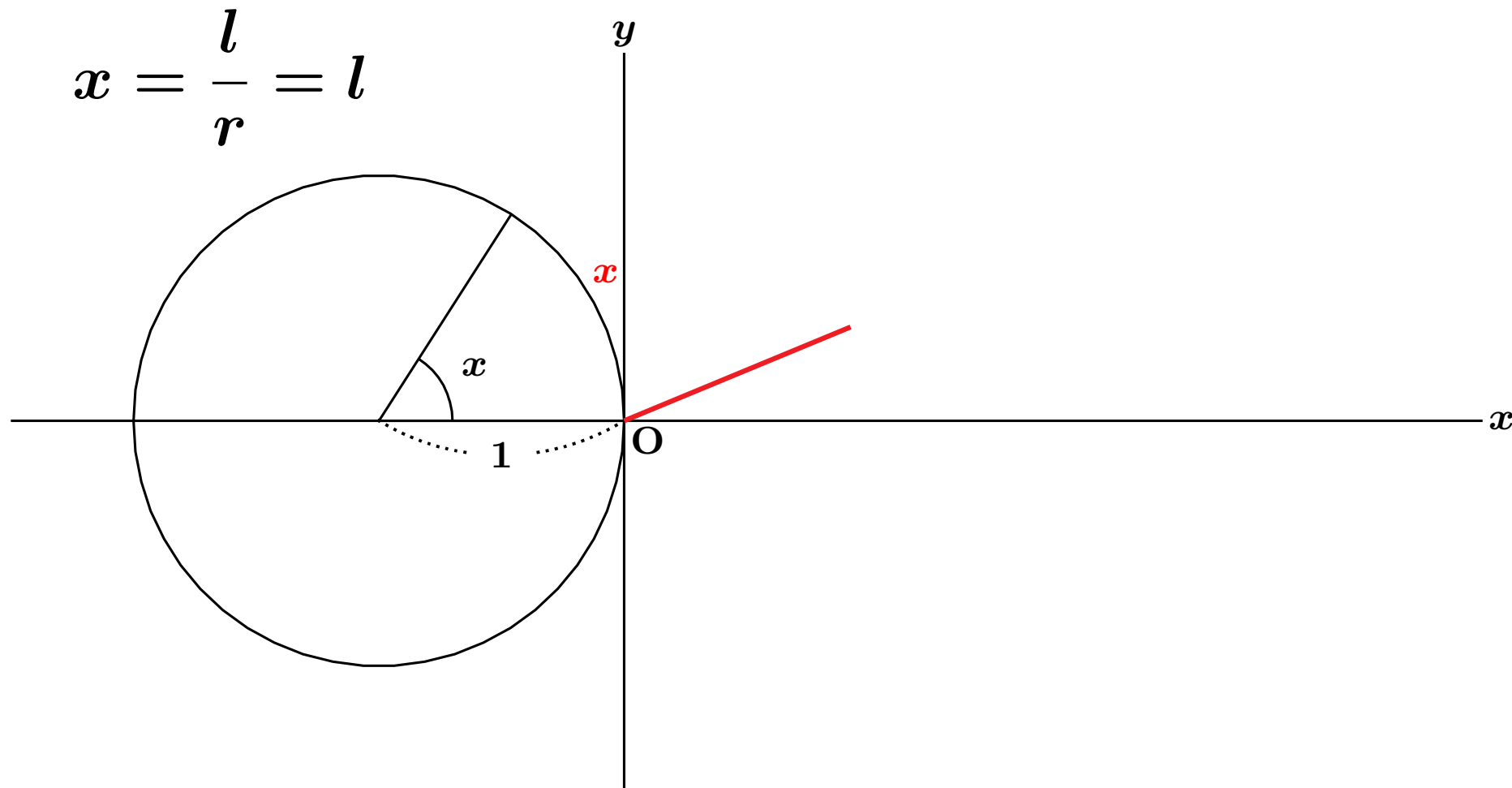
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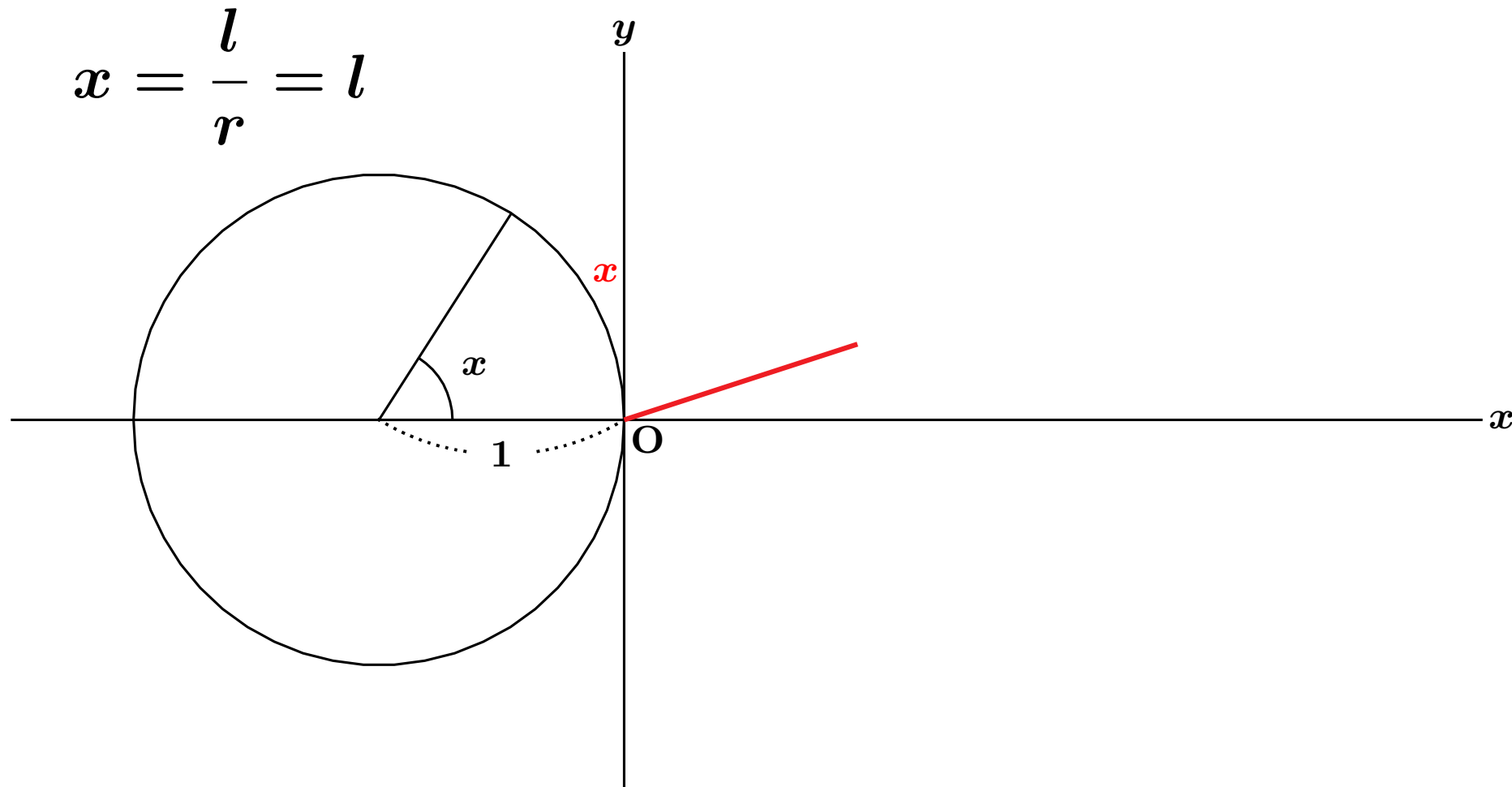
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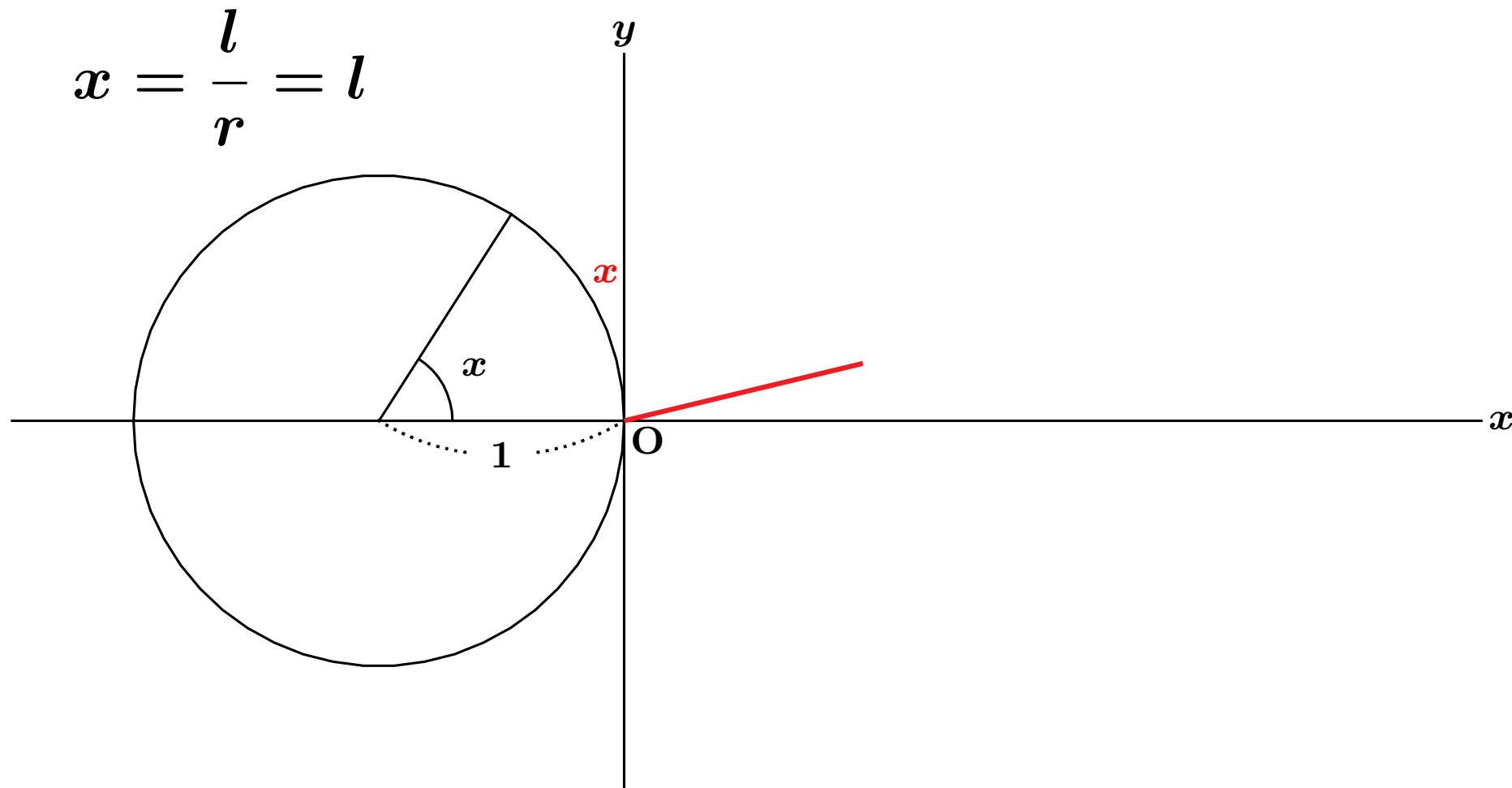


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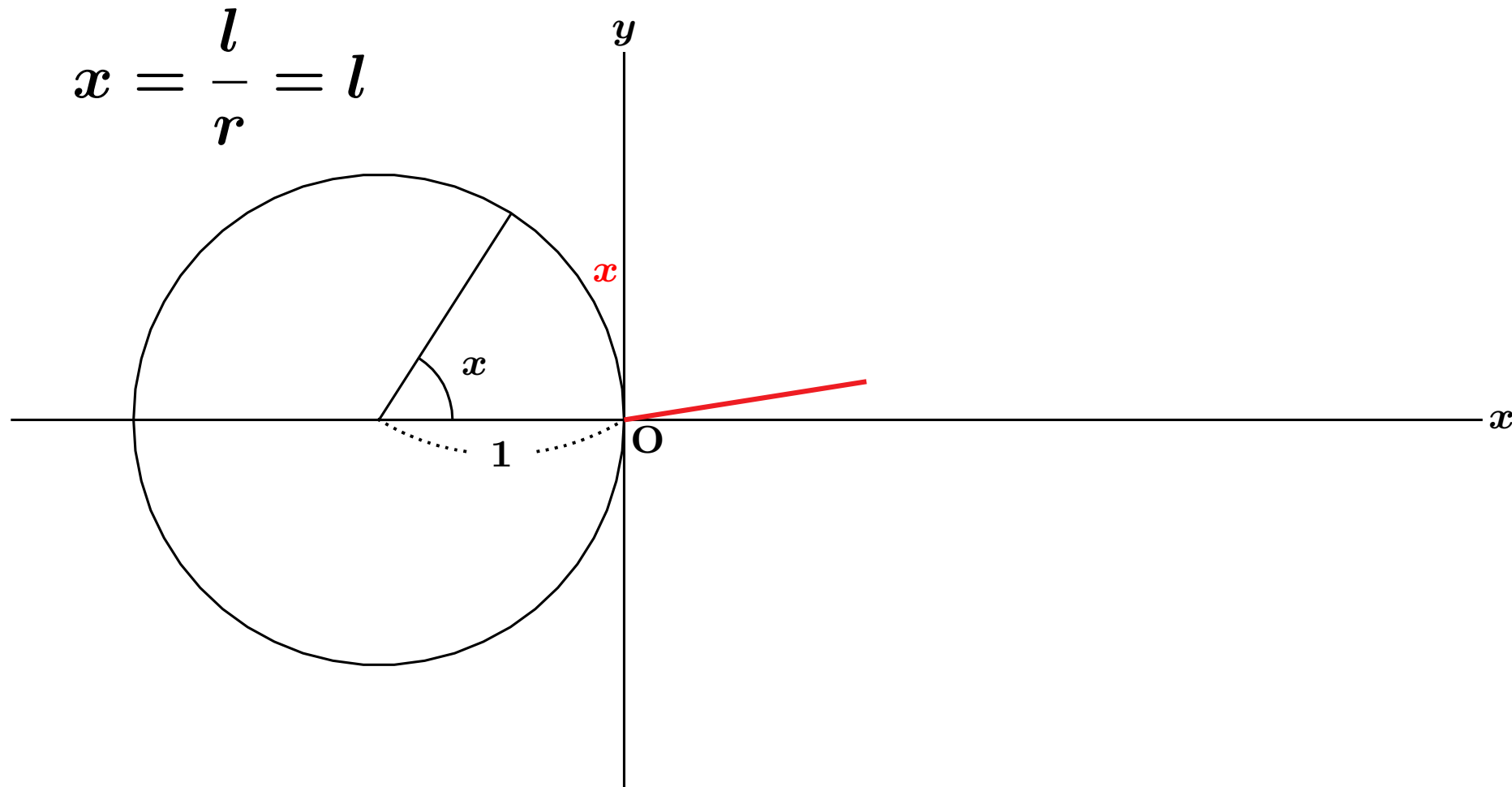




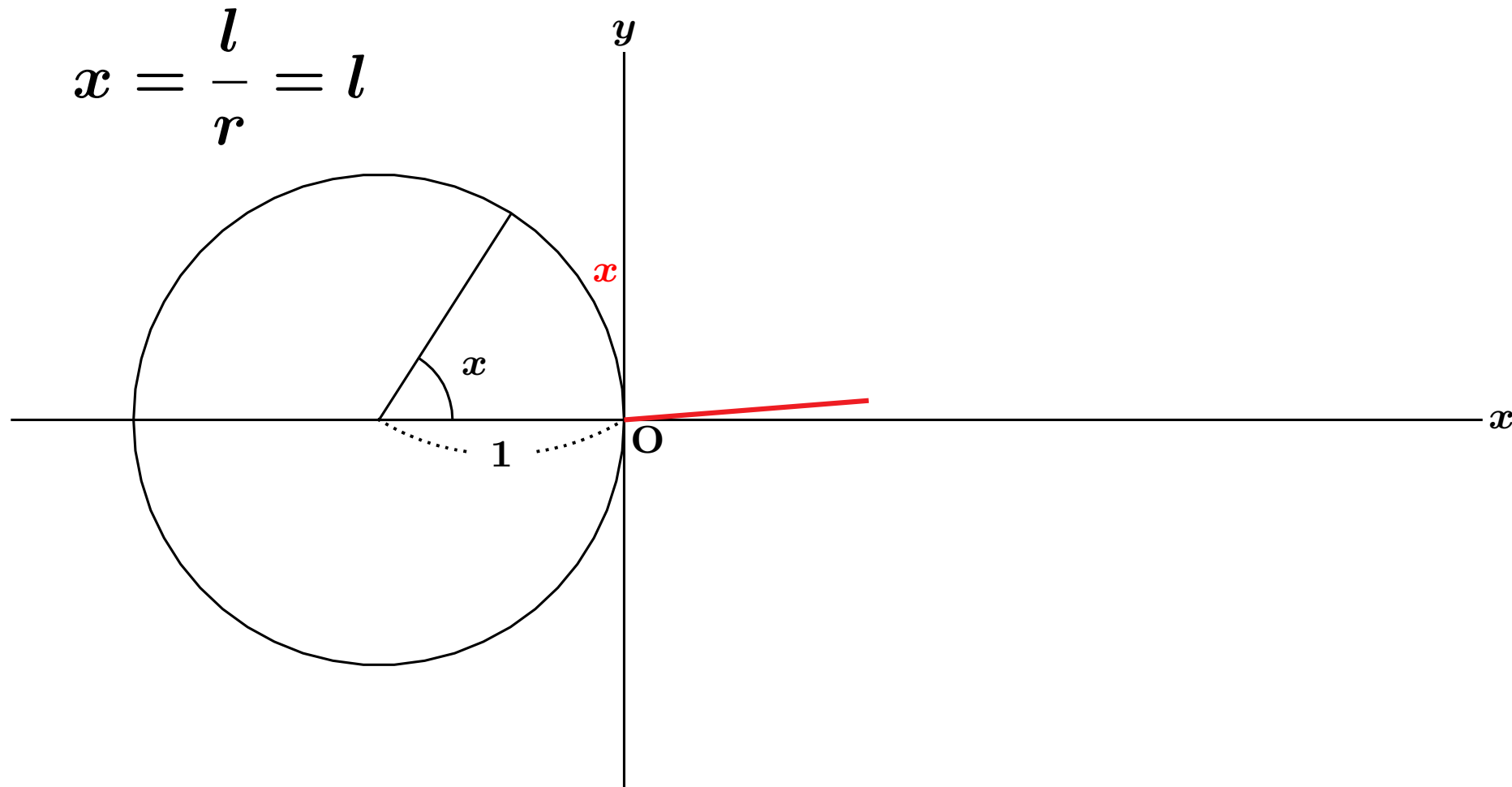
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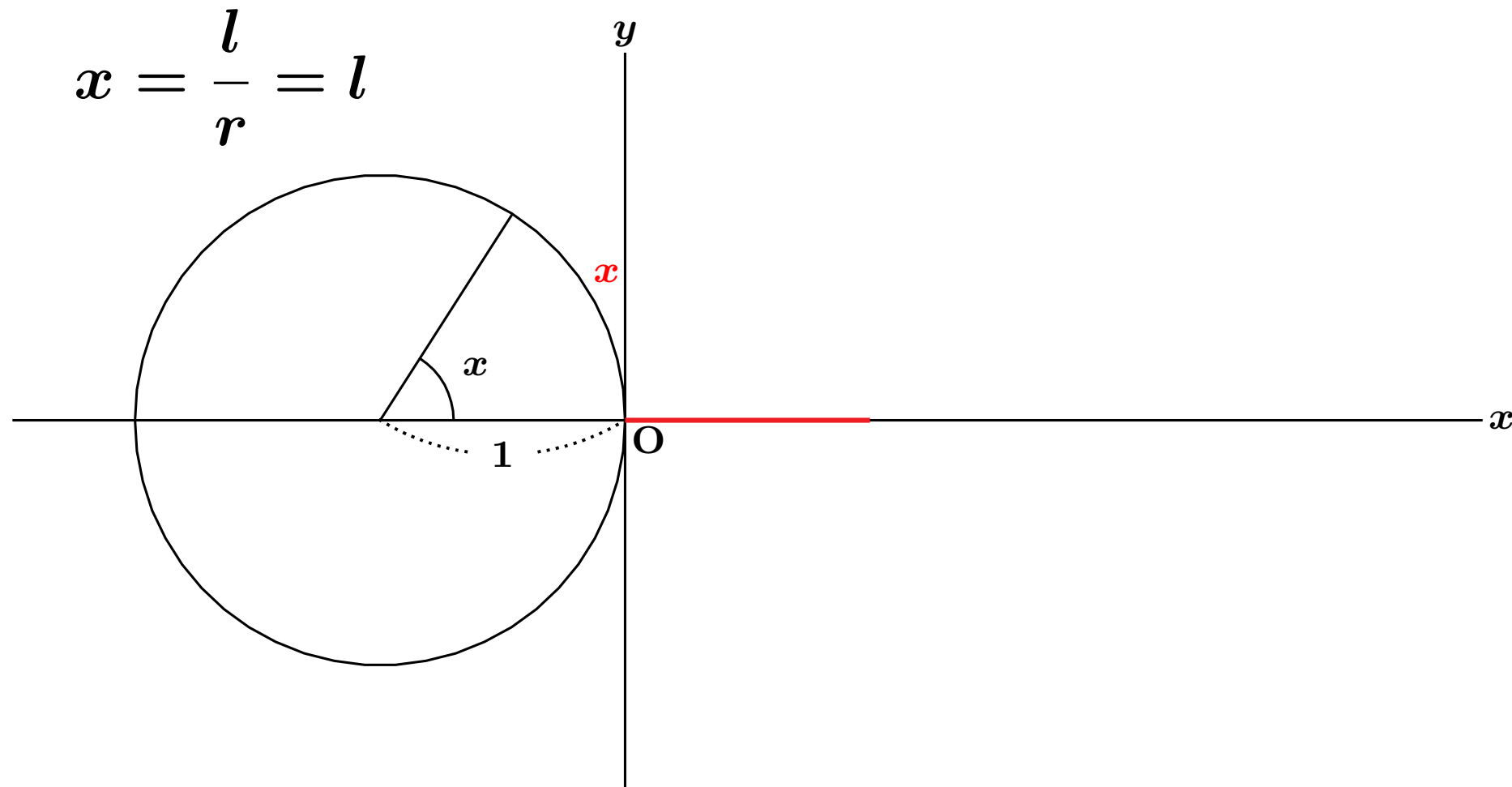
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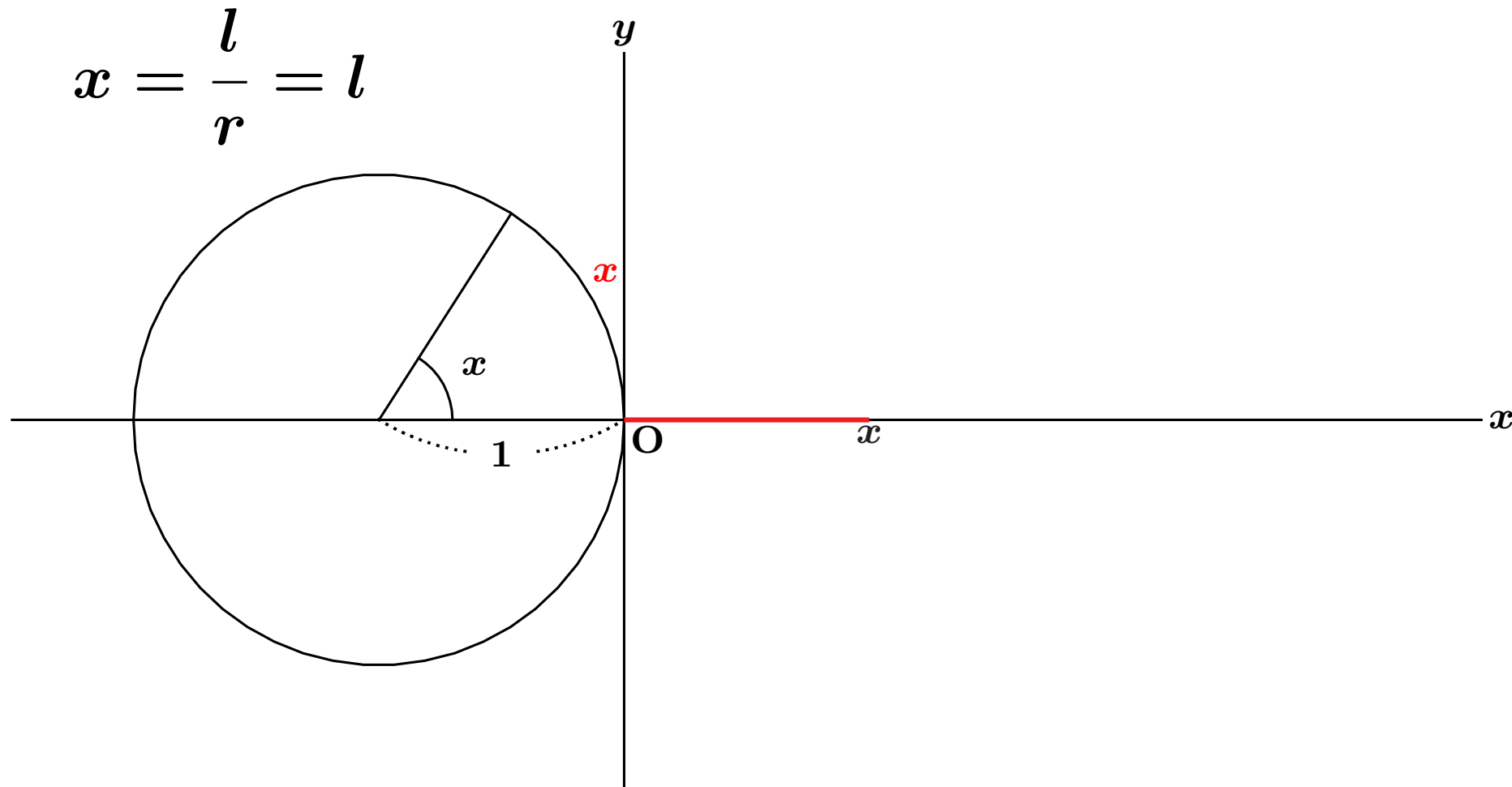
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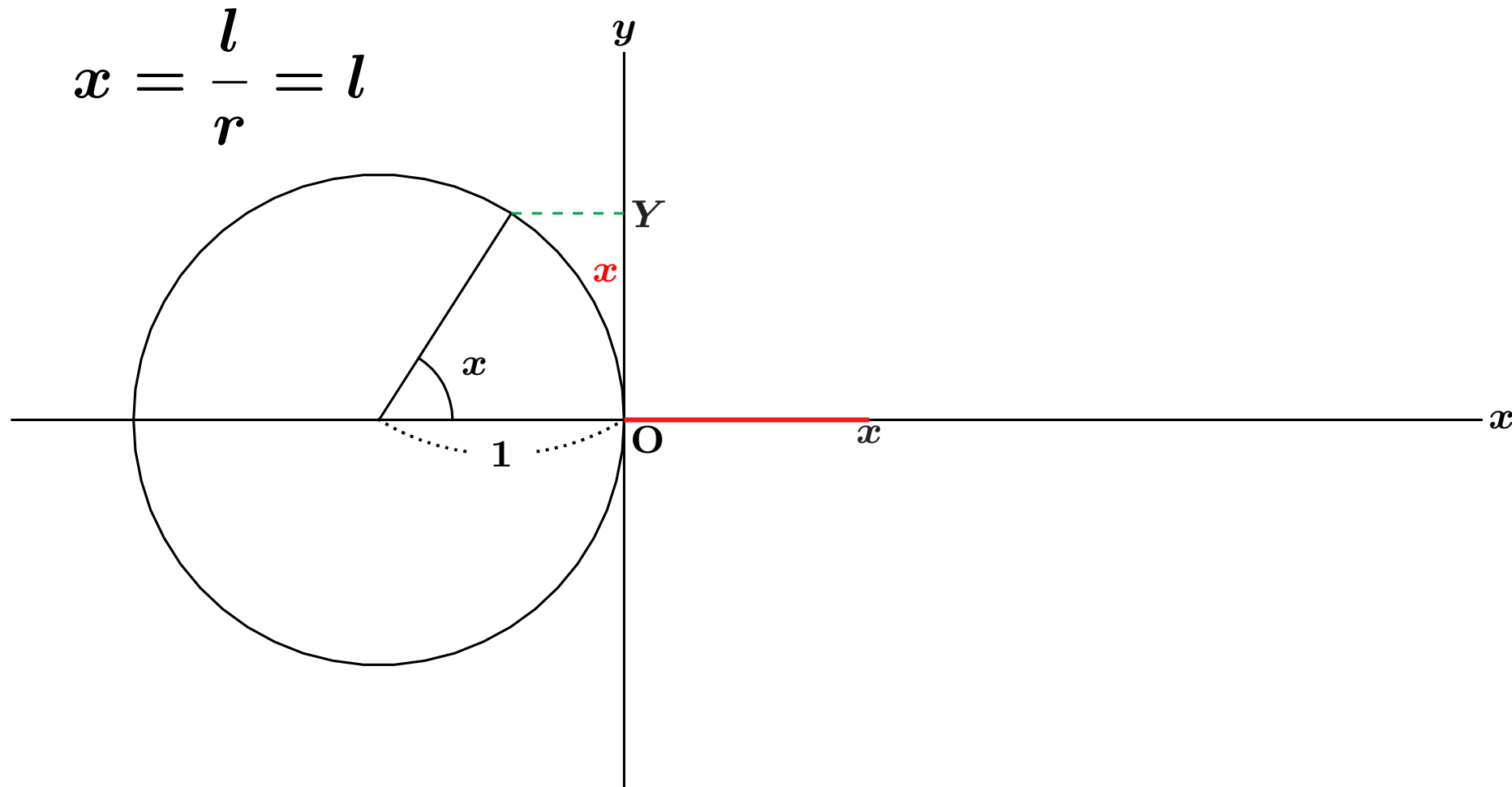
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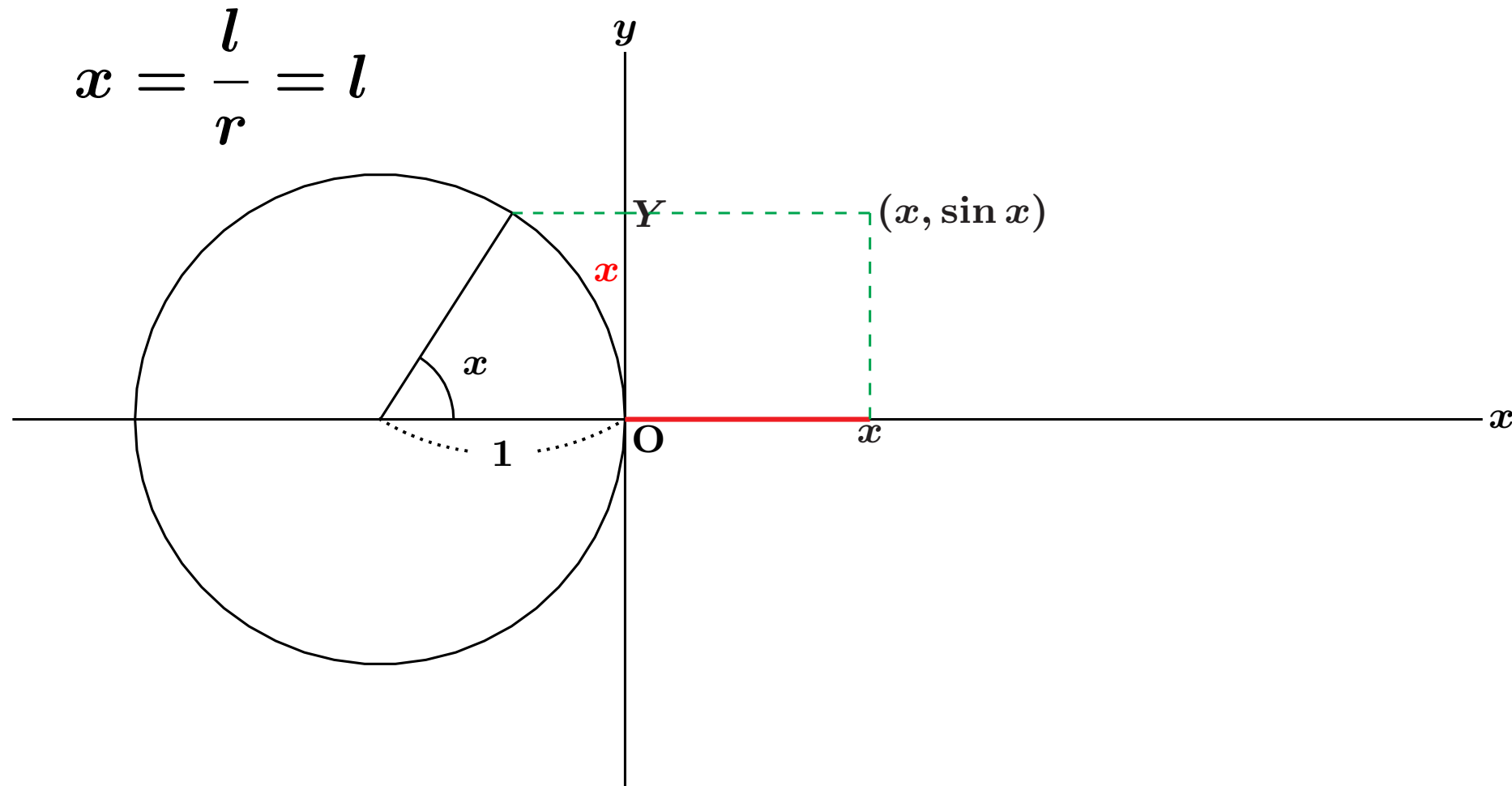
# Example of Flip Anime



# Example of Flip Anime



# Example of Flip Anime



## CindyJS

- A group of Technical University of Munich has been developing CindyJS.

CindyJS is a framework to create interactive (mathematical) content for the web. It aims to be compatible with Cinderella, providing an interpreter for the scripting language CindyScript as well as a set of geometric operations which can be used to describe constructions.



## Deveolpment of K<sub>E</sub>T CindyJS

- Cinderella2 can export codes in CindyScripts and components in CindyScreen to a HTML file.
- CindyJS itself doesn't support K<sub>E</sub>T Cindy.
- We have developed K<sub>E</sub>T CindyJS which make it possible to use many functions of K<sub>E</sub>T Cindy in the HTML file.

## Details of the development

- We have developed a program to create a file contained of a list of data of functions, for example,

`Listplot,basic1,3995,4076,Divoptions, ...`

Here, `basic1`, `3995` and `4076` mean this function is written from line 3995 to line 4076 in library `basic1`. The subsequent is functions used in ‘Listplot’.

## Details of the development

- Pressing button 'KeTJS' for on-line mode or 'KeTJSoff' for off-line mode, `KeTCindy` extracts all functions written in Cindy Scripts of the original HTML and adds them to HTML together with functions used in them.
- `KeTCindyJS` modifies definitions or settings written in the HTML according to options described in 'Setketcindyjs'.

## Details of the development

- K<sub>E</sub>T CindyJS supports animations.
- Buttons for animation are available.
- ‘Animationparam’, ‘Setketcindyjs’, ‘Ketcindyjs-data’ and ‘Textedit’ have been implemented.

# Demonstrations

- General Angle [html](#)
- Focus of Ellipse [html](#)
- Drawing Sine Curve [html](#)
- Triangular Ratio [html](#)
- Atwood' Machine

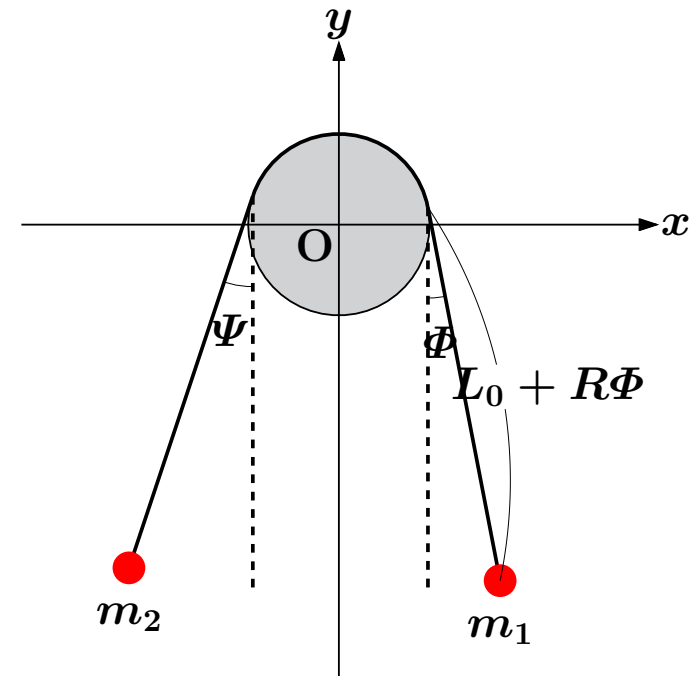
# An Atwood's machine

- A. Prokopenya in Poland visited Toho last year.
- He has been analyzing various Atwood's machines.
- He obtained:

$$\ddot{\Psi} = \frac{R (g (m_2 - \cos \Phi m_1) - \dot{\Phi}^2 ((\Phi - \Psi) R + L_0) m_1)}{R^2 (m_2 + m_1) + I_0}$$

$$\ddot{\Phi} = \frac{-\sin \Phi g + 2 \dot{\Phi} \dot{\Psi} R - \dot{\Phi}^2 R}{(\Phi - \Psi) R + L_0}$$

html



## K<sub>E</sub>T CindyJS for education

- K<sub>E</sub>T CindyJS has great potential to produce more interactive materials.
- As a result, to accelerate communication between teacher(s) and students in the classes.
- For now, K<sub>E</sub>T CindyJS can not call a CAS, which is a future work for us.