

# Nonlinear Inequalities

Thursday, January 19, 2012  
5:47 PM

Slide

A navigation menu for a presentation slide, displayed on a chalkboard background. It features four main menu items, each with a circular icon and a text box:

- info lesson Lecture** (with a circular icon containing 'info')
- helps lesson Note-Taking** (with a circular icon containing 'helps')
- Try It lesson Interactives and Labs** (with a circular icon containing 'Try It')
- help lesson Contact Me** (with a circular icon containing 'help')

Additional callouts provide further information:

- A callout from the 'Lecture' item states: "Lecture mode autostarts in ... 5".
- A callout from the 'Interactives and Labs' item states: "Table of Contents (TOC) is available".
- A callout from the 'Interactives and Labs' item states: "CC closed captioning is available".

Notes

A diagram illustrating conic sections. On the left, a chalkboard lists four types of conic sections with their respective equations and small sketches:

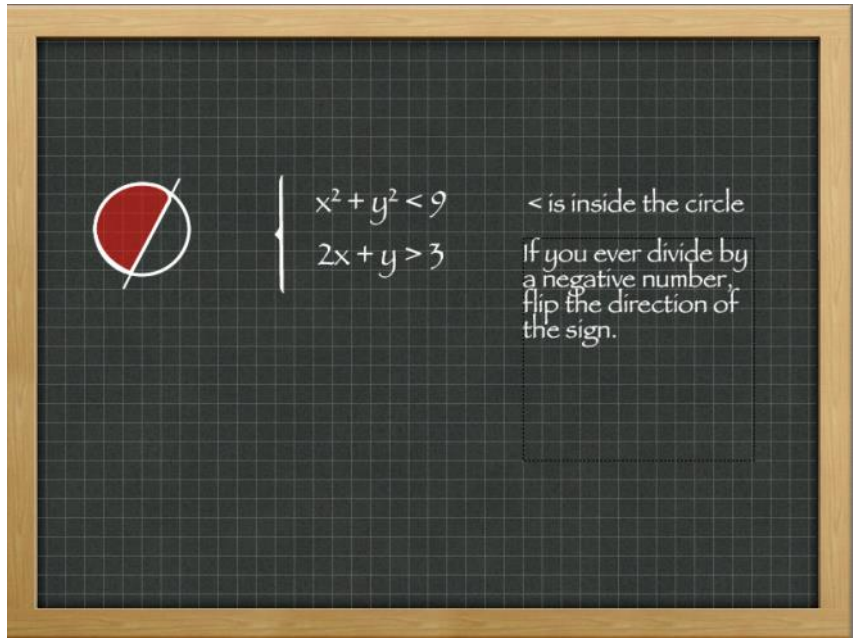
- circle**:  $x^2 + y^2 = 6$
- ellipse**:  $x^2 + 5y^2 = 6$
- parabola**:  $y = -3x^2 - 5$
- hyperbola**:  $y = k/x$

On the right, a 3D cone is shown with the text "Conic Sections" written on its side. Three colored bands represent different cross-sections:

- A red band at the top, labeled "parallel to the bottom of the cone".
- A yellow band in the middle, labeled "same angle as a side of the cone".
- A green band at the bottom, labeled "nearly perpendicular to the bottom of the cone".

Just for a quick review, remember that non-linear would be things such as the conic sections.

In these you will be identifying the shaded portions that



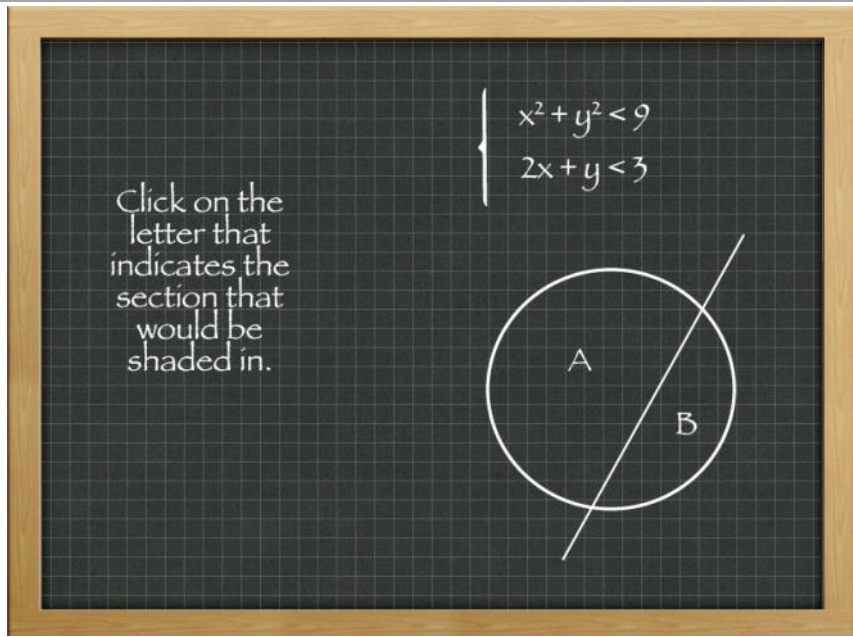
make both statements true.

The first equation is for a circle. If the sign is less than or less than or equal to then the inside of the circle is what would get shaded.

We are not done yet though because these two statements are linked as a simultaneous equation. They have to both be true.

Rearrange the linear equation and it may be clearer that you have to shade in what is above the line for it to be greater. Combining the two, you get a shaded area like this one to make both statements true simultaneously.

If you ever divide by a negative number, flip the direction of the sign.



Congratulations!  
You have completed  
this topic

Give us feedback about  
this lesson if you wish...

