

# Regions

June 13, 2014

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$$3y > 2x - 6$$

$$y > \frac{2}{3}x - 2.$$



## Example

Shade the region  $2x - 3y \leq 6$ .

Step 2: Sketch the line  $2x - 3y = 6$ .

Step 3: Figure out which region you have to shade, testing points to check.

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Shade the region  $y > x^2$ .

## Regions involving Circles

In the case of a circle with equation

$$(x - a)^2 + (y - b)^2 = r^2,$$

use the fact that

$$\text{Distance from } (x, y) \text{ to } (a, b) = \sqrt{(x - a)^2 + (y - b)^2}.$$

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- If  $(x - a)^2 + (y - b)^2 > r^2$ , the distance from the centre is **greater** than the radius, so the region is **outside** the circle.
- If  $(x - a)^2 + (y - b)^2 < r^2$ , the distance from the centre is **less** than the radius, so the region is **inside** the circle.

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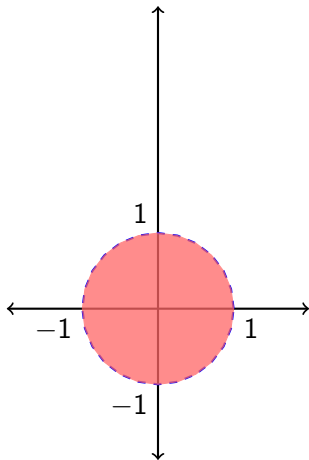
Shade the region  $x^2 + y^2 < 1$ .

## Intersecting Regions

Sketch the region  $y > x^2$  and  $x^2 + y^2 < 1$ .

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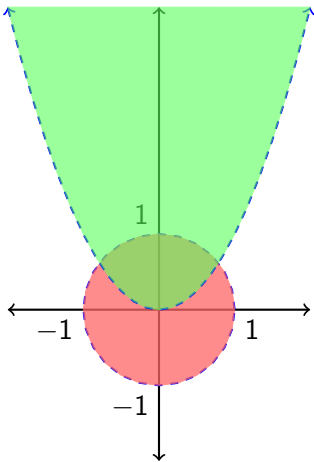
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