

5/29  
TUE

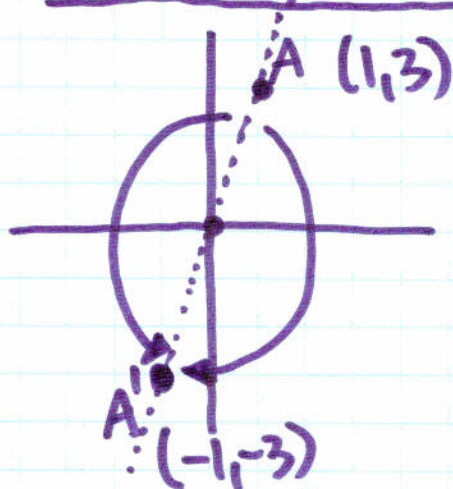
## 16.5 Rotations

... from 16.4, a reflection about the

- x-axis:  $(x, y) \rightarrow (x, -y)$

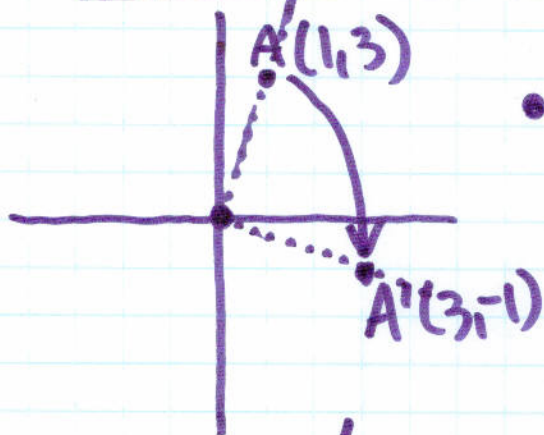
- y-axis:  $(x, y) \rightarrow (-x, y)$

### 180° CW/CCW Rotation (about the origin)



- $(x, y) \rightarrow (-x, -y)$

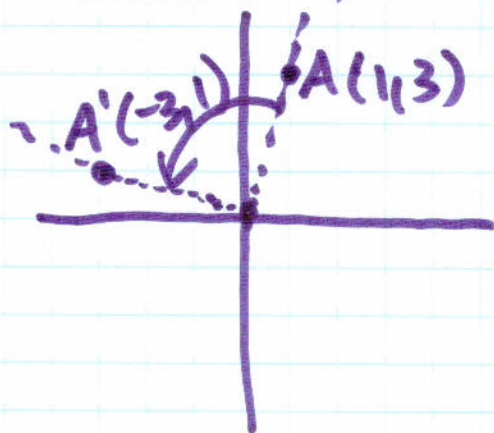
### 90° CW / 270° CCW Rotation (about the origin)



- $(x, y) \rightarrow (y, -x)$

- switch
- negate the 2nd value

### 90° CCW / 270° CW Rotation (about the origin)



- $(x, y) \rightarrow (-y, x)$

- switch
- negate the 1st value