

### 9-3 Rotations

Rotations: points rotating around a fixed point are called the point of rotation.

Rotations are counterclockwise unless otherwise stated

Rotate  $90^\circ$

I	II	III	IV
A(1, 1)	A'(-1, 1)	A''(1, -1)	A'''(1, -1)
B(2, 4)	B'(-4, 2)	B''(-2, -4)	B'''(4, -2)
$f(x, y) = (x, y)$	$f(x, y) = (-y, x)$	$f(x, y) = (-x, -y)$	$f(x, y) = (y, -x)$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$
$$= \frac{4 - 1}{2 - 1} = 3$$

$$m = \frac{2 - 1}{-4 + 1}$$
$$= \frac{1}{-3}$$

$$m = \frac{-4 + 1}{-2 + 1}$$
$$= \frac{-3}{-1} = +3$$

$$m = \frac{-2 + 1}{4 - 1}$$
$$= \frac{-1}{3}$$

$$y - 1 = 3(x - 1)$$

$$y - 1 = -\frac{1}{3}(x + 1)$$

$$y + 1 = 3(x + 1)$$

$$y + 1 = -\frac{1}{3}(x - 1)$$

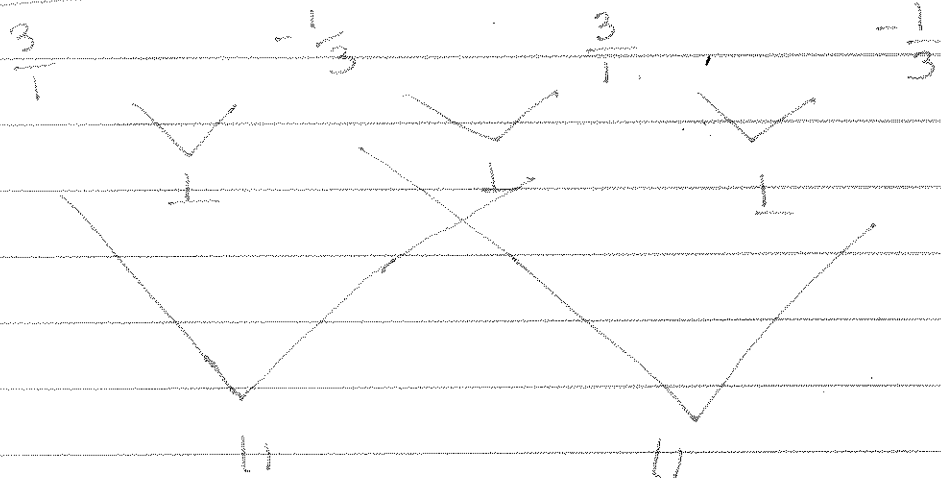
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$f(x, y) = (x, y)$		$f(x, y) = (-y, x)$		$f(x, y) = (-x, -y)$		$f(x, y) = (y, -x)$

Slope



$$y-1 = 3(x-2) \quad y-2 = -\frac{1}{3}(x+4) \quad y-4 = 3(x+2) \quad y+2 = -\frac{1}{3}(x-4)$$