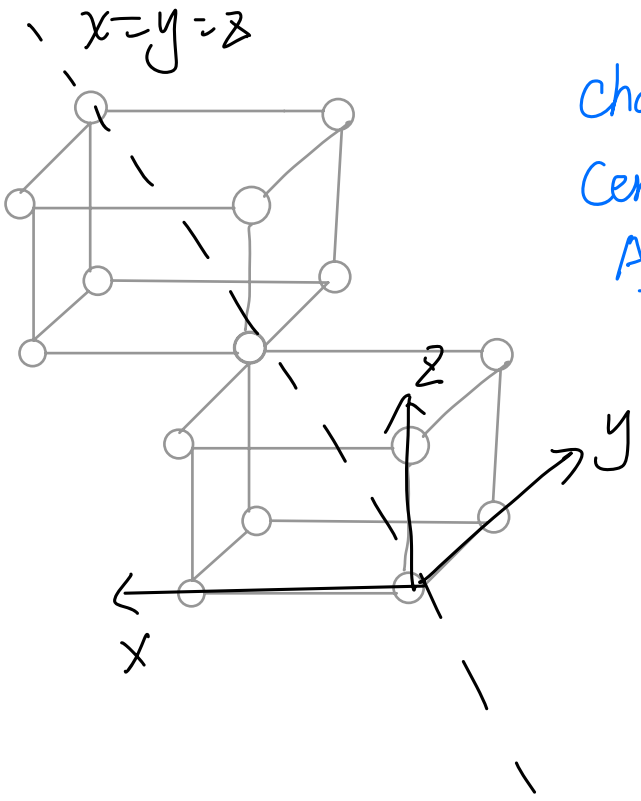
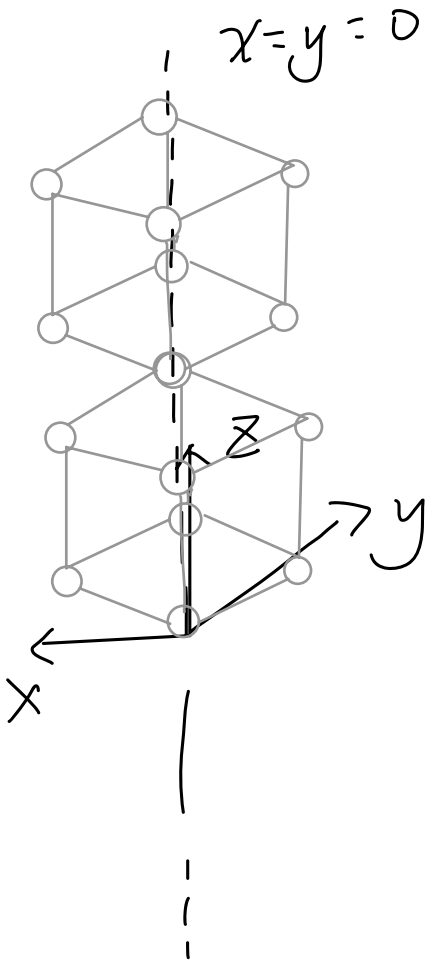
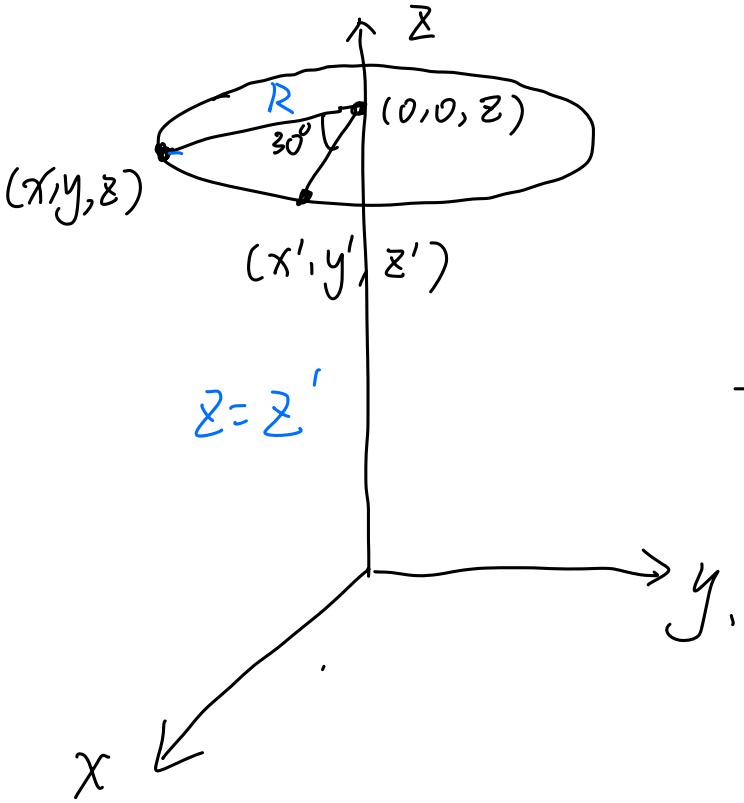
Before twisting

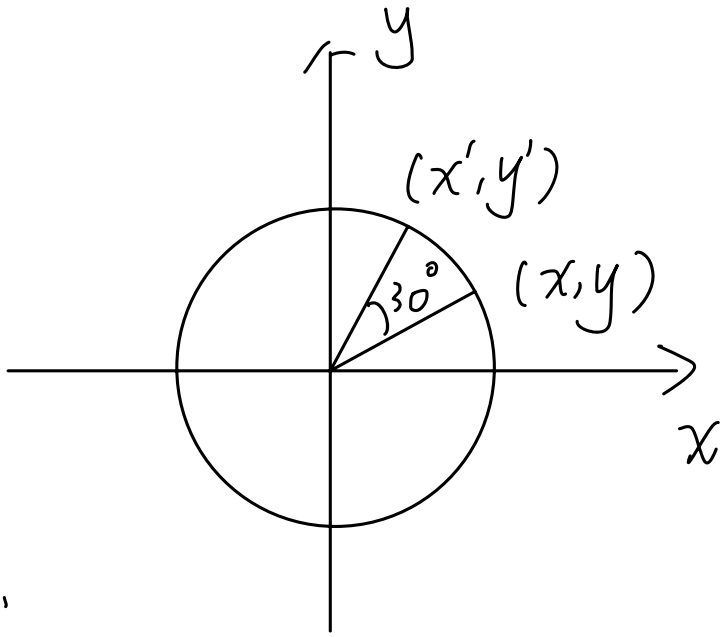


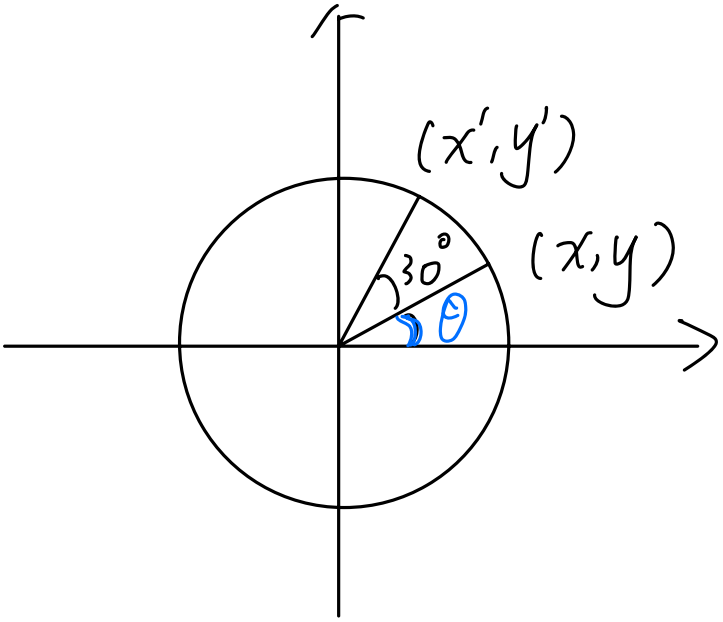
Change Central Axis →



Rotation (e.g. 30°)







$$x = r\cos\theta$$

$$y = r\sin\theta$$

$$r = \sqrt{x^2+y^2}$$

$$x' = r\cos(\theta+30^\circ) = r(\cos\theta\cos30^\circ - \sin\theta\sin30^\circ)$$

$$= r\left(\frac{x}{r}\frac{\sqrt{3}}{2} - \frac{y}{r}\cdot\frac{1}{2}\right)$$

$$= \frac{\sqrt{3}}{2}x - \frac{1}{2}y$$

$$y' = r\sin(\theta+30^\circ) = r(\sin\theta\sin30^\circ + \cos\theta\cos30^\circ)$$

$$= r\left(\frac{y}{2}\cdot\frac{1}{2} + \frac{x}{r}\cdot\frac{\sqrt{3}}{2}\right)$$

$$= \frac{\sqrt{3}}{2}x + \frac{1}{2}y$$

$z' = z$

mapping

$(x, y, z) \rightarrow (x', y', z')$

Directly relate to the chord