

9-6 day 2

SKIP 23, 24, 34, 66

Equation conversion. Use same "formulas" for coordinate conversion. What are they?

$$x = r \cos \theta$$

$$y = r \sin \theta$$

$$\tan \theta = \frac{y}{x}$$

$$r^2 = x^2 + y^2$$

Rectangular to polar.

Ex 1) $x^2 + y^2 = 81$

$$r^2 = 81$$

$$r = 9$$

Circle

Ex 2) $x = 8$

$$r \cos \theta = 8$$

$$r = 8 \sec \theta$$

vertical line
 $8 / (\cos \theta)$

Polar to rectangular.

Ex 3) $r = 2$

$$r^2 = 2^2$$

$$x^2 + y^2 = 2^2$$

$$x^2 + y^2 = 4$$

Ex 4) $\theta = \pi/3$

$$\tan \theta = \frac{y}{x}$$

$$\tan \frac{\pi}{3} = \frac{\sqrt{3}}{2} = \frac{y}{x}$$

$$(x)\sqrt{3} = \frac{y}{x}(x)$$

$$x\sqrt{3} = y$$

line

Ex 5) $r = \sec \theta$

$$r(\cos \theta) = \frac{1}{\cos \theta}(\cos \theta)$$

$$r \cos \theta = 1$$

$$x = 1$$

vertical line