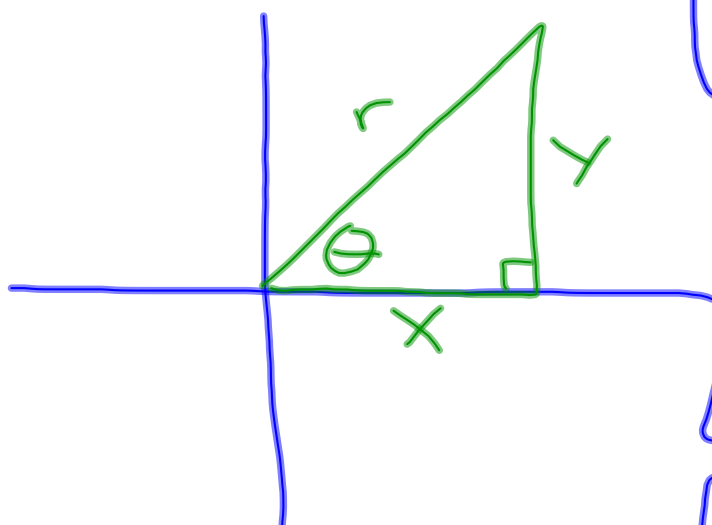


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9-6 Polar Conversions



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

$$\sin \theta = \frac{y}{r}$$

$$y = r \sin \theta$$

$$x = r \cos \theta$$

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

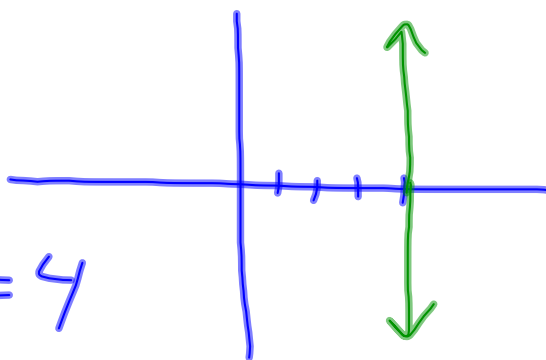
Ex 1 Convert to polar form and graph.

$$x = 4$$

$$r \cos \theta = 4$$

$$r = \frac{4}{\cos \theta}$$

$$r = 4 \sec \theta$$

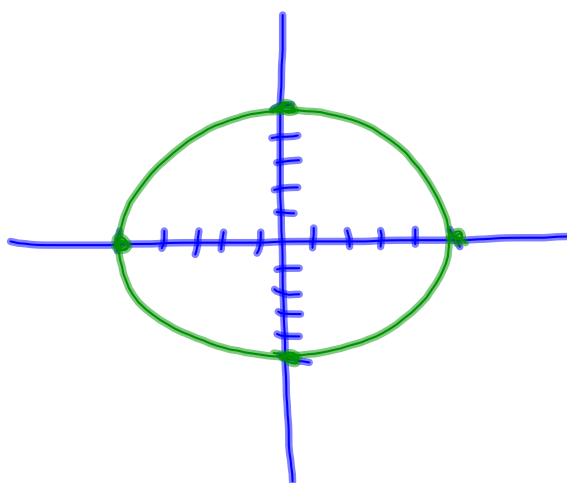


Ex 2 Convert to rectangular form and graph.

$$r = 5$$

$$r^2 = 25$$

$$x^2 + y^2 = 25$$



Ex 3 Convert to rectangular form and graph.

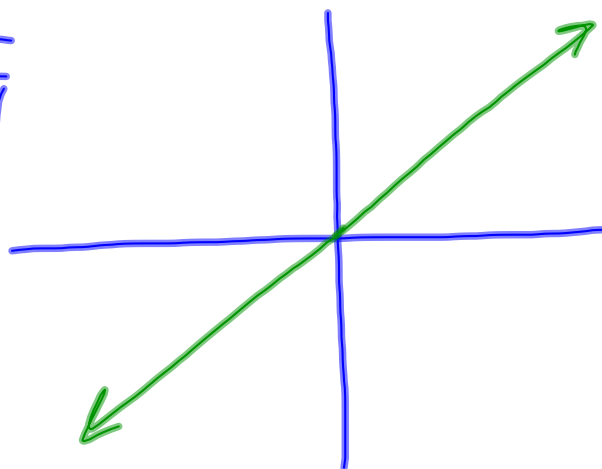
$$\theta = \frac{\pi}{4}$$

$$\tan \theta = \tan \frac{\pi}{4}$$

$$\underline{\tan \theta = 1}$$

$$\frac{y}{x} = 1$$

$$y = 1x + 0$$



Ex 4 Convert to rectangular form.

$$r = 3 \cos \theta$$

$$\underline{r^2 = 3r \cos \theta}$$

$$\boxed{x^2 + y^2 = 3x}$$

$$x^2 - 3x + y^2 = 0$$

Homework
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