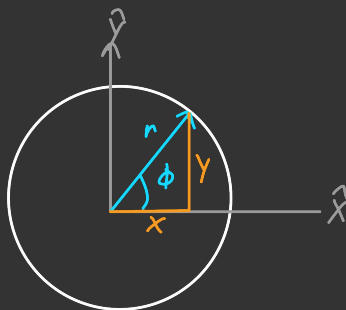# Classical Mechanics: Problem 7.9

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From the image below,

we can deduce the expressions

$$x = r cos\phi$$
$$y = r sin\phi.$$

For ϕ,

$$\tan \phi = \frac{y}{x}$$
$$\phi = \arctan \frac{y}{x}.$$