Physics Quiz # 5

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P1.
(b)

P2.
(b)

P3.
(a)
$(x^2 + y^2 - 2ax^2)^2 = 4a^2(x^2 + y^2)$
$(R^2 - 2aRcos\theta^2)^2 = 4a^2R^2$
$R^2 - 2aRcos\theta^2 = 2aR$
$R = 2acos\theta^2 + 2a$

(b)
$\sqrt{(x^2+y^2)^3} = 2axy$
$\sqrt{(R^2)^3} = 2aRcos\theta Rsin\theta$
$\sqrt{R^6} = 2aRcos\theta Rsin\theta$
$\sqrt{(R^3)^2} = 2aRcos\theta Rsin\theta$
$R^3 = 2aRcos\theta Rsin\theta$
$R = 2acos\theta sin\theta$

P4.
$speed = \frac{|\Delta\vec{\theta}|}{\Delta t}R,\ \left|\Delta\vec{\theta}\right| = \frac{speed}{R}\Delta t$
$\left|\Delta\vec{\theta}\right| = \frac{10m/s}{10m}\Delta t$
$\left|\Delta\vec{\theta}\right| = 1\ rad/s$