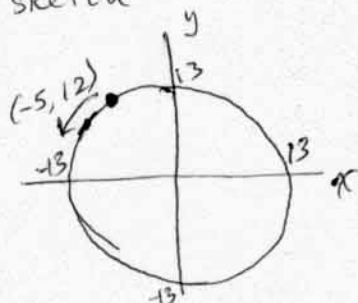


#3 $x^2 + y^2 = 169$

- a circle at the origin with radius $= \sqrt{169} = 13$

a) sketch



if y -coordinate is decreasing, bug is traveling counter-clockwise

b) $x^2 + y^2 = 169$ we want $\frac{dx}{dt}$

$$\frac{d}{dt}(x^2 + y^2) = \frac{d}{dt} 169$$

$$2x \frac{dx}{dt} + 2y \frac{dy}{dt} = 0$$

$$2x \frac{dx}{dt} = -2y \frac{dy}{dt}$$

know: $\frac{dy}{dt} = -3 \frac{\text{u}}{\text{sec}}$ (y decreasing)

$$y = 12$$

$$x = -5$$

$$2(-5) \frac{dx}{dt} = -2(12)(-3)$$

$$\frac{dx}{dt} = -\frac{36}{5} = -7.2 \frac{\text{units}}{\text{sec}}$$