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$$x^2 + 36 = 144$$

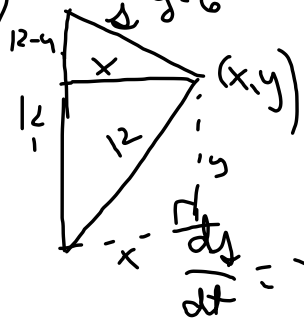
$$x^2 = 108$$

$$x = \sqrt{108}$$

$$\Delta y = 6$$

$$x^2 + y^2 = 144$$

$$x = \sqrt{144 - y^2}$$



$$36 + 108 = S^2$$

$$144 = S^2$$

$$12 = S$$

When  $y=6$  find  $\frac{dx}{dt}$  and  $\frac{dy}{dt}$

$$(12-y)^2 + x^2 = S^2$$

$$144 - 24y + y^2 + 144 - y^2 = S^2$$

$$-24y + 288 = S^2$$

$$-24 \frac{dy}{dt} = 2S \frac{ds}{dt}$$

$$-12 \frac{dy}{dt} = 12(-2)$$

$$\frac{dy}{dt} = .2 \text{ m/sec}$$

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

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