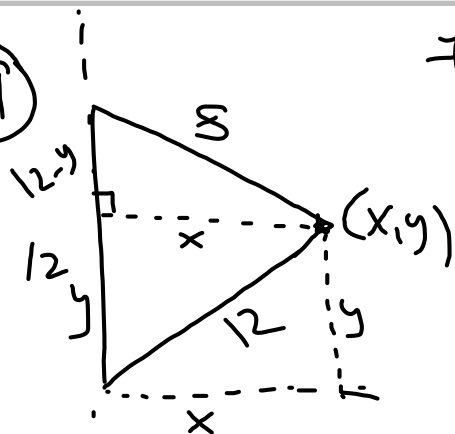


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Find $\frac{ds}{dt}$ and $\frac{dy}{dt}$ when $y=6$

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

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

$$\frac{ds}{dt} = -2 \text{ m/sec}$$

$$y = 6$$

$$36 + x^2 = 144$$

$$x^2 = 108$$

$$x = \sqrt{108}$$

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

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

$$288 - 24y = s^2$$

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

$$-24 \frac{dy}{dt} = 2(12)(-2)$$

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

$$\frac{dx}{dt} = ?$$