$y=x^2-3x$ You're given $x=1$ and $\frac{dy}{dt}=5$

Find $\frac{dx}{dt}$

First observe that x is really a function of t. y is also a function of t. This means you can rewrite to clearly illustrate that x depends on t. Once you have it in this form, you can differentiate using the chain rule.

$y(t)=x(t)^2-3x(t)$ rewrite this way

$\frac{dy}{dt}=2x(t)\frac{dx}{dt}-3\frac{dx}{dt}$ differntiate using the chain rule and isolate $\frac{dx}{dt}$

$\frac{dy}{dt}=(2x(t)-3)\frac{dx}{dt}$ factor $\frac{dx}{dt}$ from the parenthesis

$5=(2(1)-3)\frac{dx}{dt}$ replace $\frac{dy}{dt}$ with 5, and x(t) with 1 as given in the statement of the problem

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

$5=-1\times\frac{dx}{dt}$ 2-3 is -1

$-5=\frac{dx}{dt}$ divide both sides by -1 to get that $\frac{dx}{dt}=-5$