

Initial Value Problems

1. Solve $\frac{dy}{dx} = -5x^2 + x - 3$ with initial condition $y(1) = 5$.
2. Solve $\frac{dy}{dx} = 3 \cos x$ with initial condition $y\left(\frac{\pi}{2}\right) = -3$.
3. The velocity of a particle moving along the x -axis is given by $v(t) = 3t^2 - 2$. Find the position as a function of t if $x(0) = 7$.