Print your name: _

Answer each question completely. You must justify your answers to get credit. Even a correct answer with no justification will get no credits. Each problem is worth 5 points.

1. Verify that the function $y = \sqrt{x}$ is a solution to the differential equation $xy' = \frac{y}{2}$.

Solution. We compute the derivative $y' = \frac{1}{2\sqrt{x}}$. Then we get $xy' = \frac{x}{2\sqrt{x}} = \frac{\sqrt{x}}{2} = \frac{y}{2}.$

2. Below is the slope field of the first order ODE $y' = y^2 - \frac{1}{4}x^3$. Sketch the graph of the solution passing through the origin.

