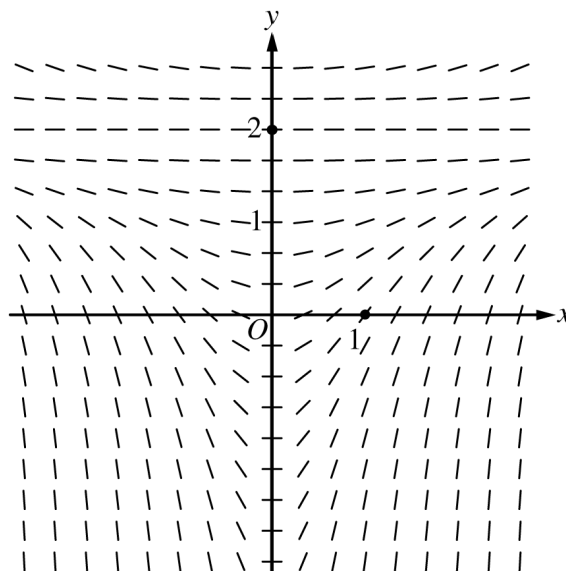**Problem 1.** Consider the differential equation $\dfrac{dy}{dx} = \dfrac{1}{3}x(y-2)^2$.

(a) A slope field for the given differential equation is shown below.

Sketch the solution curve that passes through the point $(0, 2)$, and sketch the solution curve that passes through the point $(1, 0)$.

(b) Let $y = f(x)$ be the particular solution to the given differential equation with initial consider $f(1) = 0$. Write an equation for the line tangent to the graph of $y = f(x)$ at $x = 1$. Use your equation to approximate $f(0.7)$

Problem 1 (continued). Consider the differential equation $\dfrac{dy}{dx} = \dfrac{1}{3}x(y-2)^2$.

(c) Find the particular solution $y = f(x)$ to the given differential equation with initial condition $f(1) = 0$.