

§9.2

Example 1. $\frac{dy}{dx} = x - y$ (Use slope fields).

Example 2. Use Euler's method with step size $h = 0.5$ to solve $\frac{dy}{dx} = x - y$ with initial value $y(0) = 1$.

Example 3. Use Euler's method with step size $h = 0.1$ to solve $\frac{dy}{dx} = xy$ with initial value $y(1) = 1$. Find $y(1.5)$.

§9.3

Example 1. Solve $\frac{dy}{dx} = ky$.

Example 2. Solve $\frac{dy}{dx} = xy$ with initial condition $y(1) = 1$ and compare the approximating result $y(1.5)$ with Example 3 in §9.2.

Example 3. Solve $\frac{dy}{dx} = \frac{2x}{6y^2 - \sin y}$.

Example 4. Solve $\frac{dy}{dx} = 4x^3y$ with the initial condition $y(0) = 3$.

Example 5. Solve $(\sec^2 y)x^{-1}y' = e^{2x^2}$.

Example 6. Find the orthogonal trajectories of the family of curves $y = kx$ for $k \in \mathbb{R}$.

Example 7. Find the orthogonal trajectories of the family of curves $y = kx^2$ for $k \in \mathbb{R}$.