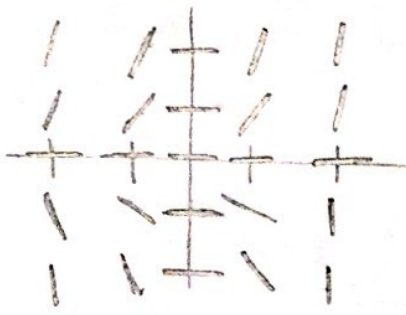


FR

$$\frac{dy}{dx} = x^2 y$$

a) slope field

(1)



b) $f(0) = 1$ Euler start at $x=0$
 step = 0.1
 Approximate $f(0.2)$

x	y	dy/dx
0	1	0
0.1	1.01	0.01
0.2	1.001	

$y = .1(0) + 1$ $f(0.2) \approx 1.001$

$y = .1(.01) + 1$ 1.003

c) Find particular solution w/ $f(0) = 1$
 Find $f(0.2)$

(1) $\frac{dy}{dx} = x^2 y$

(1) $\int \frac{1}{y} dy = \int x^2 dx$

(1) $\ln |y| = \frac{x^3}{3} + C$

$y = e^{\frac{x^3}{3} + C}$

$y = e^{\frac{x^3}{3}} \cdot e^C$

$y = C e^{\frac{x^3}{3}}$ (1) sub

$1 = C e^0$

$C = 1$ (1)

* $y = e^{\frac{x^3}{3}}$

* $y = e^{(0.2)^3/3}$ (1) ≈ 1.003