

Math 1B: Discussion 4/5/19

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Directions: Draw direction fields for the following first order differential equations.

Integrable Ordinary Differential Equations

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

Separable Ordinary Differential Equations

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

$$x^2 \frac{dy}{dx} - y = 0$$

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

$$\frac{dy}{dx} = \sec(y)$$

$$\frac{dy}{dx} = \sqrt{1 - y^2}$$

(Note the last three in this group are more specifically **autonomous differential equations**, since they only involve y).

First Order Linear Ordinary Differential Equations

$$\frac{dy}{dx} + \frac{y}{x} = x$$

$$\frac{dy}{dx} + \frac{y}{2x} = 1$$