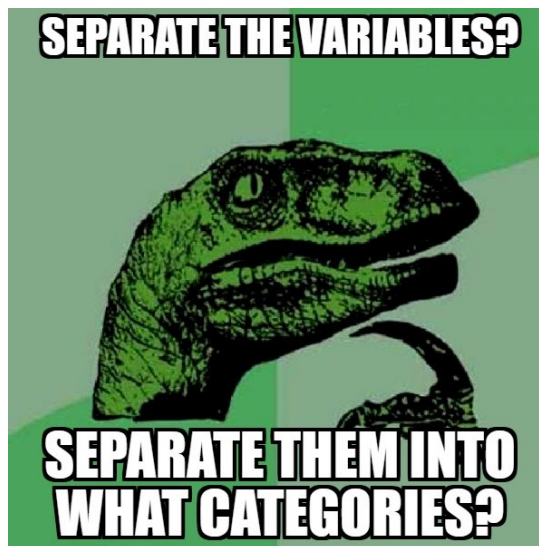


Calculus
Lesson 6.2 and 6.3: Differential Equations
and Separation of Variables
Mrs. Snow, Instructor



Last lesson, we learned to analyze visually the solutions of differential equations using slope fields. In this section we will learn how to solve a more general type of differential equation. The strategy is to rewrite the equation so that each variable occurs on only one side of the equation. This strategy is called **separation of variables**.

Solving a differential equation through: Separation of Variables:

$$y' = \frac{2x}{y}$$

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

Find the general solution:

$$(x^2 + 4) \frac{dy}{dx} = xy$$

Finding a particular solution: given the initial condition of $y(0) = 1$, find the particular solution of the equation

$$xydx + e^{-x^2} (y^2 - 1)dy = 0$$

Find the equation of the curve that passes through the point (1,3) and has a slope of:

$$\frac{y}{x^2}$$