6.3 Notes: Differential Equations and Separation of Variables

Separation of Variables: Rearrange equation with y and dy (dependent variable) on the left and the x, dx (independent variable) on the right side of the equation

1) Solve the differential equation $\frac{dy}{dx} = \frac{2x}{y}$

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

3) Find a general solution of $2x + 3yy' = 0$. Then find the particular solution, $y = f(x)$, if the solution passes through the point $(1, -2)$.

4) Find a general solution to $yy' = 6\cos(\pi x)$. Then find the particular solution, $y = f(x)$, if the function passes through the point $(1, 2)$.

5) Solve $y' = (x + 1)y$