

Learning Target: We will be able to use the technique of separation of variables to solve differential equations

Find the general solution

$$(1) \quad y \frac{dy}{dx} - 2e^x = 0$$

Find the particular solution

$$y \frac{dy}{dx} - 2e^x = 0 \quad \text{Initial condition } y(0) = 6$$

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(2) general solution

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

particular solution  
when  $y(0) = 0$

(3) General Solution  
 $dP - kP dT = 0$

Initial Value  
 $P(0) = 100$

(4)  $dT + k(T-70) dt = 0$        $T(0) = 140$

(5)  $\frac{dy}{dx} = y \times \sin(x^2)$        $(0, 1)$