

Checklist

What you should know

By the end of this subtopic you should be able to:

- identify and classify a differential equation by type, order and linearity
- set up a differential equation to model situations where information about rate of change is given
- find an approximate solution of the first-order differential equation $y' = F(x, y)$, if $y(x_0) = y_0$ is given, using the iterative process of Euler's method
- find an exact solution of a separable differentiable equation by rearranging the equation into the form $y' = f(x)g(y)$ and separating the variables
- find an exact solution of a homogeneous differentiable equation by rearranging the equation into the form $y' = F\left(\frac{y}{x}\right)$ and using substitutions
- find an exact solution of a first-order linear differentiable equation by rearranging the equation into the form $y' + P(x)y = Q(x)$ and finding the integrating factor.

