## Section 2.5 Solutions by subtitutions

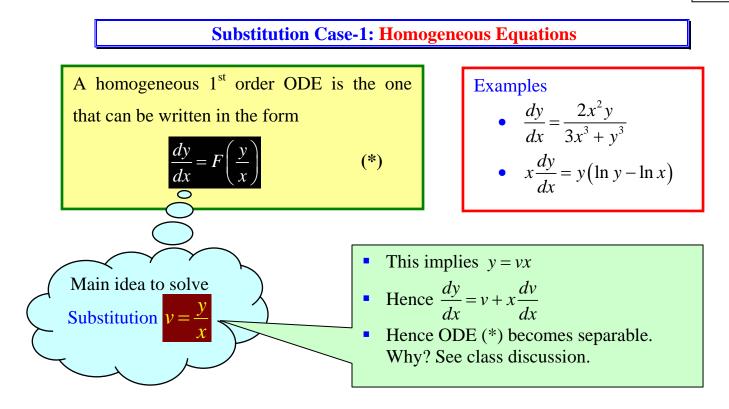
Certain ODE's which are neither separable nor linear can be converted to separable or linear form using appropriate substitutions. Here we are going to consider three cases of such substitutions.

## **Learning Outcomes**

After completing this section, you will inshaAllah be able to

- 1. get familiar with some techniques of transforming an ODE into simpler ODE by substitution
- 2. recognize and solve homogeneous 1<sup>st</sup> order ODEs
- 3. recognize and solve Bernoulli equations

We will learn to solve three types of differential equations using substitution



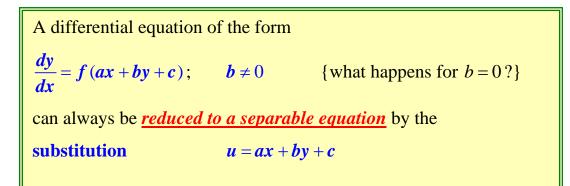
Method of solving homogeneous ODEs

• Given a 1<sup>st</sup> order homogeneous ODE. To find its solution.

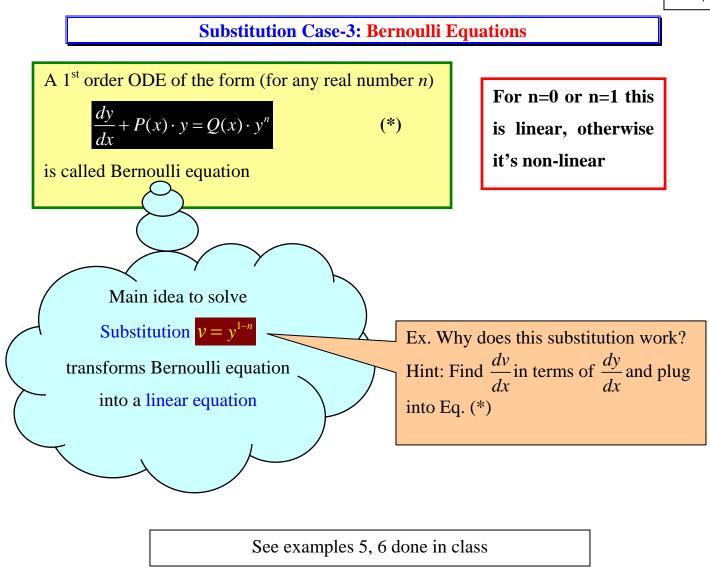
and *x*.

See examples 1, 2, 3 done in class and the exercises discussed

**Substitution Case-2: Equations of the form**  $\frac{dy}{dx} = f(ax + by + c)$ 



See example 4 done in class



End of 2.5 Do Qs. 1-30