

## Section 2.7

### Substitutions

## SUBSTITUTIONS

Sometimes a first-order differential equation may not be any of the types we have studied. However, through a well-chosen change of variables a seemingly difficult problem may be easily solved. Unfortunately, there are no rules for finding which substitution (if any) will work. The best approach is to **“Try something!”** It sometimes pays to be clever.

## EXAMPLES

1.  $y' + y \ln y = ye^x$
2.  $(2 + e^{-x/y})dx + 2\left(1 - \frac{x}{y}\right)dy = 0$
3.  $xy'' = y' + x(y')^2$