

# EE303 — Energy Systems and Power Electronics

## Lecture 22. Power flow analysis

Prof. Dionysios Aliprantis

Electrical & Computer Engineering

Nov. 5, 2009

# Today's objectives

- DERIVE** the power flow equations
- STATE** the power flow problem
- IDENTIFY** knowns, unknowns, and equations
- EXPLAIN** the Newton–Raphson algorithm

# 1-D Newton–Raphson Example

## Example

Find the solution of

$$f(x) = x \sin(x) - 3 = 0$$

using the Newton–Raphson method, and

- $x^{(0)} = 0$
- $x^{(0)} = 2$
- $x^{(0)} = 5.5$

# Reading material

The material we covered today corresponds to:

- Module T7, pp. 79–111 of the class notes
- Chapter 14.1–14.2, pp. 419–427 of textbook