Homework 7 Problems

ECON 441: Introduction to Mathematical Economics   Instructor: Div Bhagia

Exercise 8.5

1. For each $F(x, y) = 0$, find dy/dx for each of the following:

   (a) $y - 6x + 7 = 0$ (b) $3y + 12x + 17 = 0$ (c) $x^2 + 6x - 13 - y = 0$

2. For each $F(x, y) = 0$ use the implicit-function rule to find dy/dx

   (d) $F(x, y) = 6x^3 - 3y = 0$

3. For each $F(x, y, z) = 0$ use the implicit-function rule to find $\partial y/\partial x$ and $\partial y/\partial z$:

   (a) $F(x, y, z) = x^2 y^3 + z^2 + xyz = 0$

Exercise 14.2

1. Find the following:

   (a) $\int 16x^{-3} \, dx \quad (x \neq 0)$

   (c) $\int (x^5 - 3x) \, dx$

   (d) $\int 2e^{-2x} \, dx$

Exercise 14.3

1. Evaluate the following:

   (a) $\int_1^3 \frac{1}{2} x^2 \, dx$ (e) $\int_{-1}^1 (ax^2 + bx + c) \, dx$

2. Evaluate the following:

(a) $\displaystyle\int_1^2 e^{-2x}\, dx$

(d) $\displaystyle\int_e^6 \left(\frac{1}{x} + \frac{1}{1+x}\right) dx$

5. Verify that a constant c can be equivalently expressed as a definite integral:

(a) $\displaystyle c = \int_0^b \frac{c}{b}\, dx$

(b) $\displaystyle c = \int_0^c 1\, dt$