Homework 7 Problems

ECON 441: Introduction to Mathematical Economics

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

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)
$$\int_{1}^{2} e^{-2x} dx$$
 (d) $\int_{e}^{6} \left(\frac{1}{x} + \frac{1}{1+x}\right) dx$

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

(a)
$$c = \int_0^b \frac{c}{b} \, dx$$
 (b) $c = \int_0^c 1 \, dt$