

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) $c = \int_0^c 1 dt$