ESS1001 Basic Mathematics 2021/22

Assignment 1

Answer all the questions. Hand over the assignment to the Department of Economics and Statistics before 4.00 pm on Monday 28 August 2023.

Any submissions after the deadline will not be considered.

1. Evaluate each of the following expressions.

   a. $200 \div 25 \times 8 \times 3 \div 4$

   b. $3^4 \times 10 - 2 \times 6 \times 4$

   c. $20 + 2[4^2 - 2(6 - 2^2)]$

   d. $\frac{3^3 - 2(15-14)^2}{33-9+1}$

   e. $\left(\frac{2}{3} \times \frac{5}{16}\right) - \left(-1\frac{3}{5} \div 4\frac{4}{5}\right)$

2. Solve the following equations.

   a. $3x + 2 = -17$

   b. $3(3y - 8) = -2(y - 4) + 3y$

   c. $2x^2 + 85x + 200 = 0$

   d. $4x^2 - 20x + 25 = 0$

   e. $2x^2 - 6x - 20 = 0$

3. Simplify the expressions.

   a. $5x^2 - 6xy - 32x + 3xy - x^2 + 4x$

   b. $(6 + 2x)(4 - 2x)$

   c. $(x + 2y)^2$

   d. $(6 - 5x)(10 - 2x + 3y)$

4. Factorise the following.

   a. $x^2 + 6x + 9$

   b. $x^2 - 2x - 80$

   c. $30x^2 + 52x + 14$

   d. $\frac{x^2+5x+6}{x+3}$

   e. $\frac{x^2+5x+6}{x^2+x-2}$

5. a. Solve the following simultaneous equations. Draw graphs of the equations and verify your answer.

$$8x - 2y = 160$$
$$11x + y = 295$$

   b. Draw the graph of the following quadratic equation.

$$x^2 - 5x - 24 = 0$$