

## Business Mathematics (BK/IBA) – Quantitative Research Methods I (EBE) Digital test 2

### Question 1

b)

|                |                |
|----------------|----------------|
| Family name    | Galt           |
| Given name     | John           |
| Student number | 1234567        |
| Programme      | EBE            |
| Date           | 6 October 2015 |

### Question 2

a)

$$s_i = 2s_{i-3}$$

where  $s_i$  is the market share of webshops in year  $i$ .

b)

$$c = \left( \prod_{i=1}^{23} a_i \right) \frac{\sqrt{b+c}}{|b|}$$

### Question 3

a)

The screenshot shows an Excel spreadsheet with the following data:

|   | A | B  | C  | D  | E | F | G | H        | I        | J        | K        | L | M        |
|---|---|----|----|----|---|---|---|----------|----------|----------|----------|---|----------|
| 1 | 0 | -1 | 2  | -3 |   | 0 |   | 0.056911 | 0.121951 | 0.219512 | 0.056911 |   | 0.398374 |
| 2 | 1 | 4  | 0  | 5  |   | 0 |   | 0.178862 | 0.097561 | -0.02439 | 0.178862 |   | 1.252033 |
| 3 | 4 | -3 | 0  | -2 |   | 0 |   | 0.357724 | 0.195122 | -0.04878 | -0.14228 |   | -0.99593 |
| 4 | 0 | 4  | -2 | 0  |   | 7 |   | -0.15447 | 0.097561 | -0.02439 | -0.15447 |   | -1.0813  |

b)

excel\_digitaltest\_2\_answers.xlsx - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Add-Ins

Clipboard Font Alignment Number Styles Cells Editing

Calibri 11

General

Conditional Formatting Format as Table Cell Styles

Insert Delete Format Sort & Filter Find & Select

Formula Bar:  $=N1:N3-E1:E3$

|   | A     | B     | C   | D | E     | F | G     | H     | I | J        | K        | L      | M | N        | O | P        |
|---|-------|-------|-----|---|-------|---|-------|-------|---|----------|----------|--------|---|----------|---|----------|
| 1 | -20.3 | 12.5  | 5.6 |   | 2.3   |   | -20.3 | 65.2  |   | 4663.13  | -1205.67 | 166.68 |   | 51165.04 |   | 51162.74 |
| 2 | 65.2  | -14.6 | 4.3 |   | -27.5 |   | 12.5  | -14.6 |   | -1205.67 | 369.41   | 7.22   |   | -12616.3 |   | -12588.8 |
| 3 |       |       |     |   | 43.7  |   | 5.6   | 4.3   |   | 166.68   | 7.22     | 49.85  |   | 2363.259 |   | 2319.559 |
| 4 |       |       |     |   |       |   |       |       |   |          |          |        |   |          |   |          |
| 5 |       |       |     |   |       |   |       |       |   |          |          |        |   |          |   |          |

Sheet1 Sheet2 Sheet3 Sheet4

Ready 100%

c)

**Solver Parameters**

Set Objective:

To:  Max  Min  Value Of:

By Changing Variable Cells:

Subject to the Constraints:

- 
- 
- 

Make Unconstrained Variables Non-Negative

Select a Solving Method:

Solving Method  
Select the GRG Nonlinear engine for Solver Problems that are smooth nonlinear. Select the LP Simplex engine for linear Solver Problems, and select the Evolutionary engine for Solver problems that are non-smooth.

Buttons: Add, Change, Delete, Reset All, Load/Save, Options, Help, Solve, Close

d)

|                       |                     |
|-----------------------|---------------------|
| Formula for $f$ in B2 | =LN(B\$1)+EXP(\$A2) |
|-----------------------|---------------------|

Do not forget to save this file regularly!