Instructor: Dr. R.A.G. Seely
(Sept 2019)

Test 1
(version B)

Algebra & Functions (Maths 201–016)

(Marks)

*Show your work—***justify** *all your answers. Just having the correct answer is not sufficient.*
Pace yourself—a rough guide is to spend not more than $2m$ or $3m$ minutes on a question worth m marks.

(8×2) 1. Evaluate the following expressions:

(a) 105% of 20

(b) $8 - 3 \times 4 + 5$

(c) $\dfrac{4(8-5)}{7-(1+3)}$

(d) $(5 - |38 - 2^3 \cdot 5|) - 10$

(e) $\dfrac{4}{7} \div \dfrac{8}{21}$

(f) $\dfrac{7}{6} - \dfrac{5}{18}$

(g) $\left(\dfrac{1}{5} \times 15\right)\left(\dfrac{1}{5} \times 30\right)$

(h) $\dfrac{7}{2} \div \left(\dfrac{6}{5} + \dfrac{3}{10}\right) \times \dfrac{5}{14}$

(5×3) 2. Expand and simplify the following algebraic expressions:

(a) $(3x+5)(3x-5)$

(b) $(3x-5)^2$

(c) $(4-3x)^2 - 16$

(d) $2(x+4)(4x-1) - 3x(x+4)$

(e) $(5x-2)^2 - (2x-5) + x(x-3)$

(3×3) 3. For each of the following equations, show the appropriate arithmetic and algebraic steps isolating the variable x on the left side of the equation (and so solve the equation).

(a) $12x + 3 - x = 2x - 15$

(b) $\dfrac{9x}{11} = \dfrac{45}{33}$

(c) $5x^2 - 12x + 9 = 5(x-3)(x+3)$

(Total: 40)