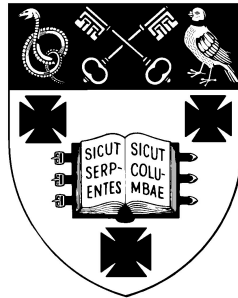


RADLEY COLLEGE
Entrance Scholarships



MATHEMATICS I

March 2010

Time allowed 1 hour

You may try the questions in any order.

No calculating aids may be used.

Show all working.

1. a) Work out exactly
- i) 7.09×4.82 (3 marks)
- ii) $537.742 \div 6.7$ (3 marks)
- b) Give the answers to the following as fractions in their simplest form
- i) $\frac{2}{7} + \frac{4}{35}$ (3 marks)
- ii) $9\frac{1}{3} \times 1\frac{1}{8}$ (3 marks)
- iii) $\left(3\frac{5}{12} - 1\frac{1}{2}\right) \div 5\frac{3}{4}$ (4 marks)
2. Work out as simply as possible
- a) $631^2 - 369^2$ (4 marks)
- b) $(92 \times 73) + (73 \times 81) - 73^2$ (4 marks)
- c) $(28 \times 83) + (17 \times 36) - (53 \times 17) + (83 \times 55)$ (4 marks)
- d) $\frac{(529 \times 769) - 529^2}{20 \times 52.9}$ (5 marks)
3. a) Multiply out and simplify
- i) $(4x + y)^2$ (3 marks)
- ii) $(18a^2 - 6ab + 2b^2)(3a + b)$ (3 marks)
- b) Factorise fully
- i) $25ab^4 - 10a^2b^3$ (3 marks)
- ii) $50a^2 - 18b^2$ (3 marks)
- iii) $x^2 - 4x - 21$ (3 marks)

c) Simplify

i) $\frac{7x^2}{21x^3 + 14x}$ (3 marks)

ii) $xy^3 \div \left(\frac{x^2}{y^3}\right)$ (3 marks)

4. Solve each of these equations for x

a) $3(2x - 3) + 9(x - 4) = 30$ (3 marks)

b) $\frac{4x + 3}{5} - \frac{x - 6}{7} = 10$ (4 marks)

c) $(x + 4)(x - 1) - (x - 4)^2 = 79$ (5 marks)

Rearrange the following formula to make x the subject

d) $\frac{a}{x - b} = \frac{c}{x}$ (4 marks)

5. Solve each of these pairs of equations for x and y

a) $7x - 3y = 51$
 $5x - 2y = 37$ (6 marks)

b) $\frac{1}{2}x + \frac{4}{5}y = 17$
 $\frac{7}{9}x + \frac{1}{2}y = 19$ (6 marks)

6. Solve each of these equations for x

a) $x^2 - 17x + 42 = 0$ (4 marks)

b) $4x^2 + 7x - 15 = 0$ (6 marks)

c) $\frac{8}{x - 3} + \frac{3}{x - 4} = 3$ (8 marks)

Total 100 marks