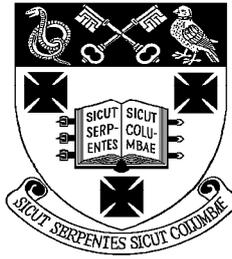


RADLEY COLLEGE
Entrance Scholarships



MATHEMATICS I

March 2007

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) 42.8×9.07 (3 marks)
- ii) $475.45 \div 37$ (3 marks)
- b) Give the answers to the following as fractions in their simplest form
- i) $\frac{11}{18} - \frac{1}{6}$ (3 marks)
- ii) $4\frac{1}{5} \div 4\frac{2}{3}$ (3 marks)
- iii) $\left(2\frac{3}{5} + 1\frac{1}{4}\right) \times 2\frac{6}{7}$ (4 marks)
2. Work out as simply as possible
- a) $638^2 - 362^2$ (4 marks)
- b) $(93 \times 59) - 59^2 - (59 \times 14)$ (4 marks)
- c) $(25 \times 69) - (31 \times 89) + (58 \times 31) + (69 \times 44)$ (4 marks)
- d) $\frac{(327 \times 298) + 298^2}{29.8 \times 25}$ (5 marks)
3. a) Multiply out and simplify
- i) $(4x - 2)^2$ (3 marks)
- ii) $(3x - y)(18x^2 + 6xy + 2y^2)$ (3 marks)
- b) Factorise fully
- i) $20x^2y + 24xy^2$ (3 marks)
- ii) $12x^2 - 27y^2$ (3 marks)
- iii) $x^2 - 9x + 20$ (3 marks)

c) Simplify

i) $\frac{4x^2}{12x^3 + 16x}$ (3 marks)

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

4. Solve each of these equations for x

a) $5(3x - 1) + 6(x - 5) = 28$ (3 marks)

b) $\frac{4x - 2}{3} - \frac{x + 1}{4} = 11$ (4 marks)

c) $(x + 5)^2 - (x - 3)(x + 6) = 92$ (5 marks)

Rearrange the following formula to make x the subject

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

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

a) $4x - 5y = 19$
 $3x + 2y = 43$ (6 marks)

b) $\frac{2}{3}x + \frac{2}{5}y = 22$
 $\frac{3}{4}x - \frac{2}{3}y = 8$ (6 marks)

6. Solve each of these equations for x

a) $x^2 + 2x - 24 = 0$ (4 marks)

b) $2x^2 + 13x + 20 = 0$ (6 marks)

c) $\frac{18}{x + 4} + \frac{14}{x + 5} = 5$ (8 marks)

Total 100 marks