

QUESTION 1 (12 MARKS) Use a SEPARATE Sheet of Paper (2003 WR)

(a) Evaluate, correct to 3 Significant figures  $\frac{(3.22 + 10.4) \times 5450}{12.55^2} = 471$

(b) Simplify  $e^{\ln(4x-2)} = 4x-2$ .

(c) Solve:  $3(2x - 3) = 4(x - 2)$

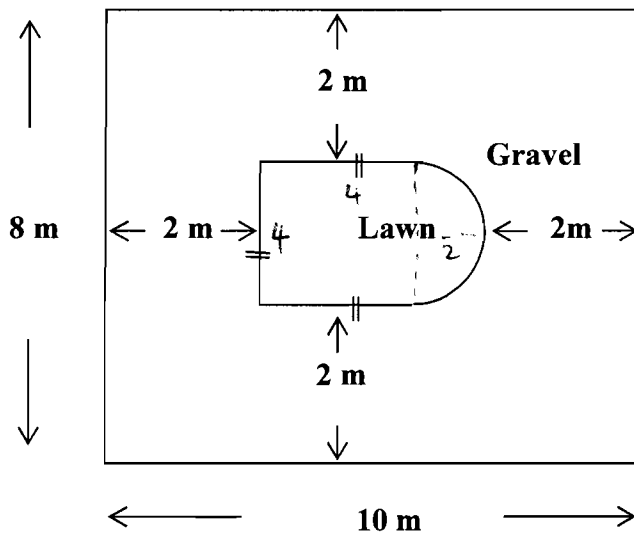
(d) Differentiate  $\cos(x^2)$

(e) Write  $0.\dot{1}0\dot{2}$  as a fraction in its simplest form.

(f) Find  $\int 5x^4 - 3x + 2 \, dx$

(g) The Backyard Force TV team is renovating a backyard to the plan shown below. Calculate the area of lawn in the backyard. (correct to 1 decimal place)

NOT TO SCALE



Hullo...

**Question 1 (12 Marks) (2005 WR)**

Use a Separate Sheet of paper

**Marks**

- (a) Factorise
- i)  $16x^2 - 9$  1
- ii)  $5a^2 + 10a$  1
- (b) Express  $3\sqrt{5} + \sqrt{20}$  in the form  $\sqrt{a}$ . 2
- (c) Simplify  $2x^2y - yx^2 + xy^2 + 2y^2x$  1
- (d) Evaluate  $\lim_{x \rightarrow \infty} \frac{3x^2 - 4x + 5}{x^2}$  2
- (e) Solve  $\frac{1}{x} = x - 1$  leaving your answer in exact form. 2
- (f) Express  $0.\dot{4}2$  as a rational number in simplest form. 2
- (g) Express  $\log_e 5$  as a decimal correct to 2 decimal places. 1

**Question 1 (12 Marks) (2006 WR)**

Use a Separate Sheet of paper

**Marks**

- (a) Express  $4.2\dot{3}$  as a fraction in simplest form. 2
- (b) Express  $\frac{5\sqrt{3}}{\sqrt{3} - \sqrt{2}}$  with a rational denominator. 2
- (c) Express  $\frac{3\pi}{8}$  radians in degrees and minutes. 1
- (d) Solve  $|2x - 3| \leq 4$  2
- (e) Find the primitive function of  $\frac{3}{4\sqrt{x}}$  1
- (f) If  $\tan \theta = \frac{7}{9}$  and  $\cos \theta < 0$ , find the exact value of  $\sin \theta$ . 2
- (g) Solve  $9^{2x-3} = 27^x$  2

**Question 1** (12 marks) (2007 WR) Begin a SEPARATE sheet of paper

- (a) Evaluate  $\frac{e+1}{\pi}$  correct to three decimal places 2
- (b) Find  $\theta$  to the nearest degree if  $\sin \theta = \frac{4 \sin 57^\circ}{6.7}$  2
- (c) What is the centre and radius of a circle with equation  $(x+2)^2 + (y-3)^2 = 2.25$  2
- (d) The mean of 3, 5, 7,  $x$  is 6.75. What is the value of  $x$ ? 2
- (e) If  $x = 2.35$  evaluate the expression  $|-3 - 4x|$  1
- (f) Factorise  $3x^2 - 5x - 2$  2
- (g) Express  $2.12^\circ$  as an angle in degrees correct to the nearest minute 1

**Question 1** (12 marks) (2008 WR) Use a SEPARATE sheet of paper or booklet.

- a) Evaluate  $\left(\frac{1}{e^{2.5}} - 1\right)^2$  correct to 3 significant figures.
- b) Solve  $|2x - 4| \leq 2$
- c) If  $\frac{4}{2 - \sqrt{3}} = a + b\sqrt{3}$  find the values of  $a$  and  $b$ .
- d) Find the sum of the first ten terms of the series  $4\frac{1}{2} + 3 + 1\frac{1}{2} + \dots$
- e) Factorise  $2z^2 + 6zy + xz + 3xy$
- f) Find the perpendicular distance from the point (1, 3) to the line  $6x - 8y + 5 = 0$

**Question 1 (12 Marks) (2009 WR) Use a Separate Sheet of paper** **Marks**

- (a) Express  $3 \cdot 5\overline{31}$  as a fraction in simplest form. **2**
- (b) If  $\tan \theta = \frac{7}{8}$  and  $\cos \theta < 0$ , find the exact value of  $\operatorname{cosec} \theta$  **1**
- (c) Evaluate  $\frac{3 \cdot 24^2 - 2 \cdot 1^2}{\sqrt{36 + 2 \cdot 1}}$  correct to 3 significant figures. **1**
- (d) Solve  $|15 - 4x| \leq 3$  **2**
- (e) If  $k = \frac{1}{3}m(v^2 - u^2)$  find the value of  $m$  when  $k = 724$ ,  $v = 14 \cdot 2$  and  $u = 7 \cdot 4$ . **2**
- (f) Find the period and amplitude for the graph of  $3y = \sin\left(2x - \frac{\pi}{4}\right)$ . **2**
- (g) Paint at the local hardware store is sold at a profit of 30% on the cost price. If a drum of paint is sold for \$67.50, find the cost price. **2**

**Question 1 (12 marks) (2005 Trialmath) Marks**

- (a) Evaluate  $\sqrt{\frac{e^2 - 1 \cdot 2}{2\pi}}$  correct to 4 significant figures. **2**
- (b) Differentiate  $3x^2(4x - 1)$  with respect to  $x$ . **2**
- (c) Express  $0 \cdot \overline{18}$  as a fraction in simplest form. **2**
- (d) Solve the equation  $\frac{x-1}{2} - \frac{x}{3} = \frac{1}{2}$ . **2**
- (e) Expand and simplify  $(2\sqrt{3} - 1)^2 - 4(1 - \sqrt{3})$ . **2**

**Question 1** (12 marks) Use a SEPARATE page/ booklet. (2008 Trialmath)

**Marks**

- (a) Evaluate  $2\pi^2 + 3e$ , correct to one decimal places. 2
- (b) Find a primitive of  $3x^3 - 4$  2
- (c) Solve  $\cos \theta = \frac{-1}{\sqrt{2}}$  for  $0 \leq \theta \leq 2\pi$  2
- (d)  $\int \frac{2}{x} dx$  2
- (e) Find the integers  $a$  and  $b$  such that  $\frac{1}{3 - \sqrt{7}} = a + b\sqrt{7}$ , where  $a$  and  $b$  are rational numbers. 2
- (f) Differentiate  $2x + \tan x$  with respect to  $x$ . 2

**Question 1** (12 marks) Use a SEPARATE page/ booklet. (2009 Trialmath)

**Marks**

- (a) Find the value of  $15^{-1.5}$ . Write your answer to three decimal places. **2**
- (b) Rationalise the denominator of  $\frac{5}{3-\sqrt{7}}$  **2**
- (c) Write the exact value of  $\sin \frac{5\pi}{4}$  **2**
- (d) Find the value of  $\log_e e^2 + \log_e 1$  **2**
- (e) Find  $\int \sec^2 2x dx$  **2**
- (f) Differentiate  $e^{2x} - 5x$  with respect to  $x$ . **2**