C.E.M.TUITION

FINAL TRIAL HSC EXAMINATION 1998

MATHEMATICS

2/3 UNIT COMMON PAPER

Total time allowed - THREE hours

(Plus 5 minutes reading time)

DIRECTIONS TO CANDIDATES :

- Attempt ALL questions.
- All questions are of equal value.
- All necessary working should be shown in every question.
- Full marks may not be awarded for badly arranged work.
- Standard integrals are on the inside cover.
- Approved silent calculators may be used.
- You must hand in a blank page if a question is unanswered.

Question 1 **Marks**

(a) Find the value of $\pi\sqrt{\dfrac{l}{2g}}$ if $l = 3\sqrt{2}, g = 9.8$. **2**

Give your answer correct to two significant figures

(b) Find the exact value of $\cos 135^0$. **1**

(c) Express as a single fraction : $x + 2 - \dfrac{x-1}{3}$ **2**

(d) Solve for r if $(r+5)^2 - (r-5)^2 = 12$ **2**

(e) Express $\dfrac{\sqrt{2}}{\sqrt{19} - 3\sqrt{2}}$ in the form $a + \sqrt{b}$ **3**

(f) Find the x and y intercepts of the line $\dfrac{x}{3} - \dfrac{y}{6} = 1$ **2**

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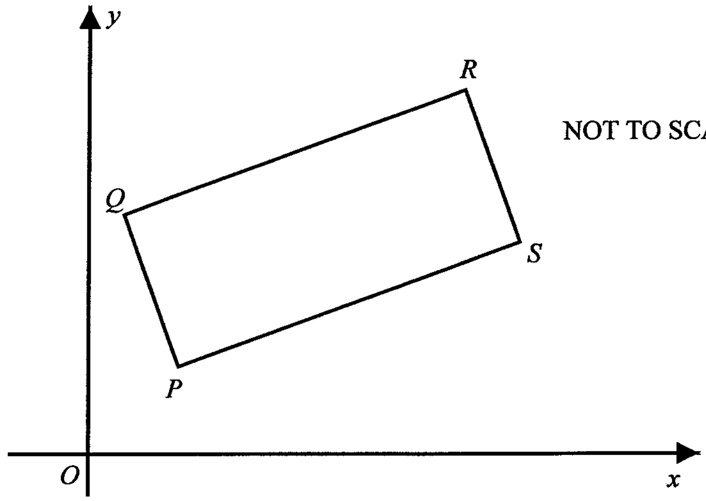
Question 2 **Marks**

(a)



In the rectangle $PQRS$, P and Q are the points $(4,2)$ and $(2,8)$ respectively. Given that the equation of PR is $y = x - 2$, show that

(i) the equation of QR is $x - 3y + 22 = 0$. **3**

(ii) the coordinates of R is $(14, 12)$ **2**

(iii) the coordinates of S is $(16, 6)$ **2**

(iv) the area of the rectangle $PQRS$ is 80 units^2 **3**

(b) If $P(x,y)$ is a point which moves in such a way that it is always a fixed distance PT away from the fixed point T, the midpoint of QS, write down the equation of the locus of P. **2**

Continue next page ....

Question 3 **Marks**

(a) Differentiate the following functions : **6**

(i) $(2x^3 - 5)^7$

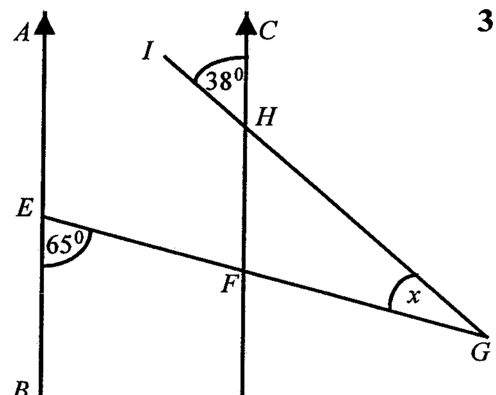
(ii) $\sin\sqrt{x}$

(iii) $e^{2x} + \ln 2x$

(b) Given that $AB \parallel CD$, and that **3**

$\angle BEF = 65^0, \angle CHI = 38^0$,

find the value of x, giving reasons.



(c) Find : **3**

(i) $\int (5x - 4)^{10}\, dx$

(ii) $\int_0^{\frac{\pi}{2}} (\cos x + x)\, dx$

Continue next page ....

Question 4 **Marks**

(a) The table shows the values of a function $y = \left(\log_e x\right)^2$ for five values of x. Fill in the missing values of y. **3**

x	1	1.25	1.5	1.75	2
y	0.0000	0.0498			0.4805

Use Simpson's rule with these five function values to estimate $\int_1^2 \left(\log_e x\right)^2 dx$. Answer correct to three significant figures.

(b) Prove the identity $(\sin x + \cos x)(1 - \sin x \cos x) = \cos^3 x + \sin^3 x$ **3**

(c) The quadratic equation $x^2 + lx + m = 0$ has roots -2 and 6. **4**
Find :

(i) the value of l and m.

(ii) the range of values of n for which the equation

$x^2 + lx + m = n$ has real roots.

(d) After winning the game in Sale of the Century, Barry Jones has a a chance to pick a prize from a board with 16 squares as shown below; **2**

1	**TRIP**	**3**	**4**
5	**6**	**7**	**8**
9	**10**	**BMW**	**12**
13	**14**	**15**	**16**

To win the prize Barry must choose a matching pair and no two prizes are identical. He gets to choose again if there is no match. Assuming that Barry has already chosen boxes 2 and 11.

What is the probability that Barry :

(i) wins the TRIP on his third pick ?

(ii) wins the BMW on his fourth pick ?

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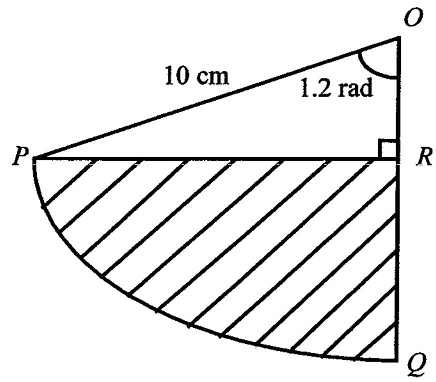
Question 5 **Marks**

(a) **8**



OPQ is a sector of the circle, centre O, radius 10 cm and $\angle POQ = 1.2$ radians.

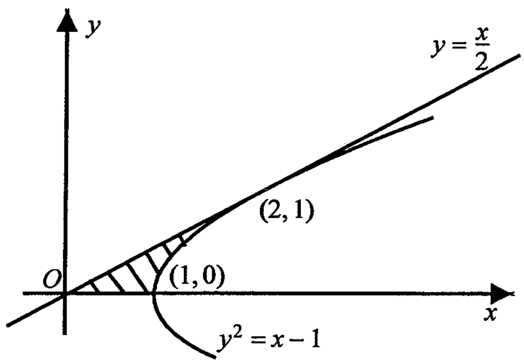
Given that $PR \perp OQ$;

(i) show that $QR = 6.38$ cm.

(ii) calculate the perimeter of the shaded region.

(iii) calculate the area of the shaded region.

(b) **4**



The line $y = \frac{x}{2}$ is the tangent the curve $y^2 = x - 1$ at the point (2, 1).
Calculate the volume formed by rotating the shaded area about the x–axis.

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Question 6 **Marks**

(a) In a certain arithmetic progression, the first term is a and the common difference is d. Given that the sum of the first four terms is equal to three times the fourth term, **6**

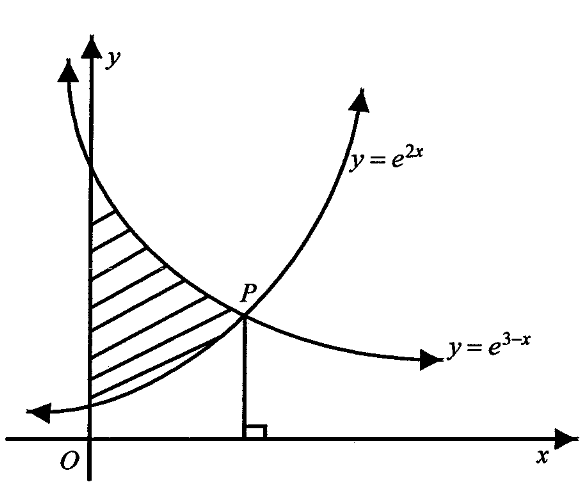
(i) show that $a = 3\,d$.

Given also that the eighteenth term is 60, calculate

(ii) the value of a and d.

(iii) the sum of the first eighteen terms.

(b) **4**



In the diagram, P is the point of intersection of the curves $y = e^{2x}$ and $y = e^{3-x}$.

Find the x–coordinate of P and hence find, to two decimal places,

the area of the region under the curve and the y–axis.

(c) Sketch the parabola given by the equation $(x-1)^2 = 12(y-2)$ **2**

showing the coordinates of the vertex and focus.

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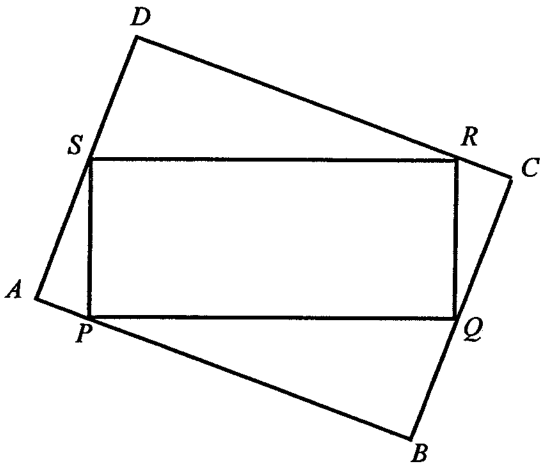
Question 7 **Marks**

(a) 7



PQRS is an inscribed rectangle inside a second rectangle *ABCD* with sides AB, BC, CD, DA passing through vertices P, Q, R, S respectively.

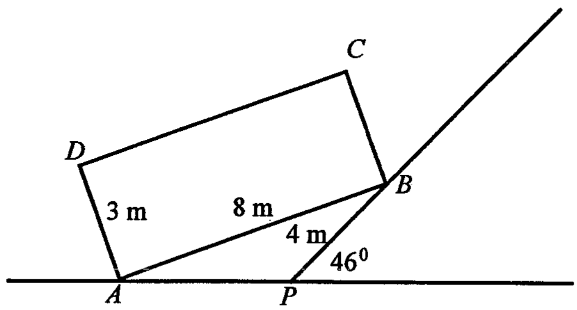
(i) Copy this diagram into your exam booklet.

(ii) Prove that ΔPBQ is similar to ΔQCR

(iii) Hence or otherwise, show that $PQ.CR = BQ.QR$

(iv) If *PQRS* is a square, prove that *ABCD* is also a square.

(ii) 5



A rectangular crate measuring 3 m by 8 m rests on a ramp inclined at 46^0 to the horizontal. $PB = 4$ m.

(a) Using Sine rule, find $\angle BAP$ to the nearest degree.

(b) Hence find the distance *D* is above the horizontal.

Continue next page ....

Question 8 **Marks**

(a) Consider the curve given by $y = 6x^2 - 9x - x^3 - 1$. **8**

(i) Find the coordinates of the two stationary points.

(ii) Find the coordinates of any point(s) of inflexion.

(iii) Determine the nature of the stationary points.

(iv) Sketch the curve for the domain $0 \le x \le 4$.

(b) The number of cryptosporidium, $N(t)$, in a water supply at a time t seconds is given by the equation : **4**

$$N(t) = 10^6 e^{0.02t}$$

(i) Show that $\frac{dN(t)}{dt} = 0.02N(t)$.

(ii) Determine how long it will take for the number to **double.**

(iii) At what rate is the number of cryptosporidium increasing when $t = 30$ sec.

Continue next page ....

Question 9 **Marks**

(a) A particle starts from rest at O and moves in a straight line so that, t seconds later, its velocity v m/s is given by $v = 2t - t^2$. **8**

Given that the particle comes instantaneously to rest at P, find

(i) the time taken to reach P

(ii) the acceleration of P

(iii) the distance OP

(iv) the total distance travelled by the particle during the first four seconds of the motion.

(b) When Shannon entered University, her parents borrowed \$40 000 to pay for her education. They plan to repay the loan by making 60 equal monthly repayments. Interest is charged at the rate of 7.5% per annum on the balance owing. **4**

(i) Show that immediately after making two monthly repayments of $\$M$, the balance is given by:

$$\$(40\,501.56 - 2.00625M)$$

(ii) Calculate the value of each monthly repayment.

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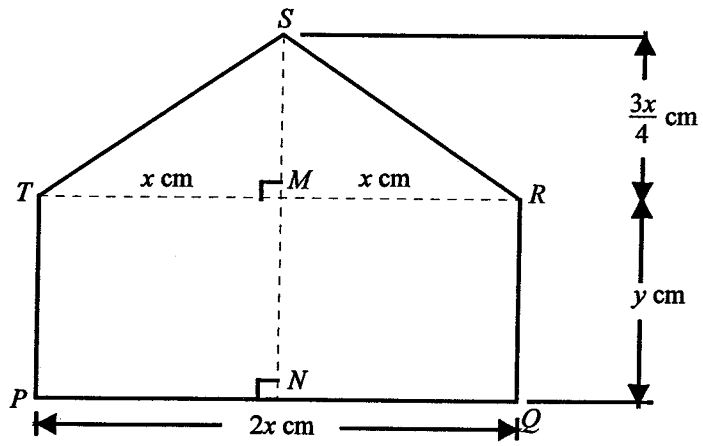
Question 10 **Marks**

(a)



The diagram shows a piece of cardboard consisting of a rectangle $PQRT$ and an isosceles triangle RST, where $PQ = 2x$ cm, $QR = y$ cm and $SM = \frac{3x}{4}$ cm. Given that the perimeter of $PQRST$ is 30 cm,

(i) show that the area, A cm^2, of $PQRST$ is given by **3**

$$A = 30x - \frac{15x^2}{4}.$$

(ii) the maximum of A. **2**

(iii) the length of the perpendicular SN from S to PQ when A is a maximum **2**

(b) Calculate the value of the ratio $\frac{36 - 18 + 9 - \ldots}{36 + 12 + 4 + \ldots}$ as a simple fraction **2**

if both the numerator a denominator are infinite series.

(c) Find the equation of the tangent to the curve $y = \log_e\left(\frac{x}{x-1}\right)$ at $x = 2$. **3**

(1)(a) $\pi\sqrt{\frac{3\sqrt{2}}{9.8}} = 1.5$ (to 2 s.f.) ✔ ✔

(b) $\cos 135^0 = -\frac{1}{\sqrt{2}}$ ✔ ✔

(c) $x+2-\frac{x-1}{3} = \frac{3(x+2)-(x-1)}{3}$ ✔

$= \frac{3x+6-x+1}{3} = \frac{2x+7}{3}$ ✔

(d) $(r+5)^2-(r-5)^2 = 12$

$r^2+10r+25-r^2+10r-25$ ✔

$20r = 12$

$r = \frac{3}{5}$ ✔

(e) $\frac{\sqrt{2}}{\sqrt{19}-3\sqrt{2}} \times \frac{\sqrt{19}+3\sqrt{2}}{\sqrt{19}+3\sqrt{2}}$ ✔

$\frac{\sqrt{38}+6}{19-18} = 6+\sqrt{38}$ ✔ ✔

(f) Let $x=0, y=-6$ ✔

Let $y=0, x=3$ ✔

(2) (a) (i) $m_{OP} \times m_{QR} = -1$

$m_{QP} = \frac{8-2}{2-4} = -3$

$m_{QR} = \frac{1}{3}$ ✔

$y-y_1 = m(x-x_1)$ ✔

$y-8 = \frac{1}{3}(x-2)$

$3y-24 = x-2$ ✔

$x-3y+22 = 0$

(ii) Solve simultaneously:

$x-3y+22 = 0$

$x-y-2 = 0$

$-2y+24 = 0$

$y = 12$ ✔

Substituting $y = 12$

$12 = x-2$

$x = 14$ ✔

(iii) Find the midpoint of PR i.e.

$\left(\frac{4+14}{2}, \frac{2+12}{2}\right) = (9,7)$ ✔

Let the coordinates of S be (a,b),

using midpoint formula of QS again

$\left(\frac{a+2}{2}, \frac{b+8}{2}\right) = (9,7)$

$a+2 = 18 \Rightarrow a = 16$

$b+8 = 14 \Rightarrow b = 6$ ✔

Coordinates of S is $(16, 6)$

(iv) $PQ = \sqrt{(4-2)^2+(2-8)^2} = \sqrt{40}$ ✔

$PS = \sqrt{(4-16)^2+(2-6)^2} = \sqrt{160}$ ✔

Area $= PQ \times PS$

$= \sqrt{40} \times \sqrt{160} = 80$ sq. units ✔

(b) Midpoint of QS is $(9, 7)$

$PT = \sqrt{(9-4)^2+(7-2)^2} = \sqrt{50}$ ✔

Therefore the equation of the locus of P is

$(x-9)^2+(y-7)^2 = 50$ ✔

(3)(a)(i) $\frac{dy}{dx} = 7(2x^3 - 5)^6 \times 6x^2$ ✓

$= 42x^2(2x^3 - 5)^6$ ✓

(ii) $\frac{dy}{dx} = (\cos\sqrt{x})\left(\frac{1}{2}x^{-\frac{1}{2}}\right)$ ✓

$= \frac{1}{2\sqrt{x}}\cos\sqrt{x}$ ✓

(iii) $\frac{dy}{dx} = 2e^{2x} + \frac{2}{2x}$ ✓

$= 2e^{2x} + \frac{1}{x}$ ✓

(b) $\angle FHG = 38^0$ (vert. opp. angles) ✓
$\angle DEF = 180^0 - 65^0 = 115^0$
(Cointerior angles are supplementary) ✓
$\angle GFH = 115^0$ (Vert. opp. angles)
$x = 27^0$ (Angle sum of triangle) ✓

(c) (i) $\frac{(5x-4)^{11}}{11 \times 5} + c$

$= \frac{(5x-4)^{11}}{55} + c$ ✓

(ii) $\left[\sin x + \frac{x^2}{2}\right]_0^{\frac{\pi}{2}}$ ✓

$= \left[1 + \frac{\left(\frac{\pi}{2}\right)^2}{2}\right] - 0$

$= 1 + \frac{\pi^2}{8}$ ✓

(4) (a)

1.5	1.75
0.1644	0.3132

✓

Using Simpson's rule:

Area $\approx \frac{h}{3}[y_1 + y_5 + 4(y_2 + y_4) + 2y_3]$ ✓

$= \frac{0.25}{3}[0 + 0.4805 + 4(0.0498 + +0.1644) +$
$2(0.3132)]$

Area ≈ 0.188 ✓

(b)
LHS $= \sin x - \sin^2 x\cos x + \cos x - \sin x\cos^2 x$

$= \sin x - \sin x\cos^2 x + \cos x - \sin^2 x\cos x$ ✓

$= \sin x(1 - \cos^2 x) + \cos x(1 - \sin\ x)$ ✓

$= \sin x\left(\sin^2 x\right) + \cos x(\cos^2 x)$ ✓

$= \sin^3 x + \cos^3 x =$ RHS.

(c)(i) $P(-2) = 0$

$4 - 2l + m = 0$

$2l - m = 4$ .... (i)

$P(6) = 0$

$36 + 6l + m = 0$

$6l + m = -36$ ...... (ii) ✓

Solving simultaneously (i) and (ii)

$l = -4$ and $m = -12$ ✓

(ii) For real roots of the equation:

$x^2 - 4x - 12 - n = 0$

$\Delta \geq 0$

$\Delta = b^2 - 4ac = (-4)^2 - 4(1)(-12 - n)$ ✓

$16 + 48 + 4n \geq 0$

$n \geq -16$ ✓

(d) (i) $\frac{1}{14}$ ✓ (ii) $\frac{12}{14} \times \frac{1}{13} = \frac{6}{91}$ ✓

(5) (a) (i) $\cos 1.2^c = \frac{OR}{10}$

$OR = 10 \times 0.3623577 = 3.623577$ ✔

$QR = 10 - OR = 6.376423 \approx 6.38$ cm ✔

(ii) Perimeter $= PR + QR +$ Arc QP

Arc $QP = 10 \times 1.2 = 12$ cm ✔

$PR = 10 \sin 1.2^c = 9.3203909$ cm ✔

Perimeter $= 9.320.. + 6.376.. + 12$

$P = 27.7$ cm (to 1 d.p.) ✔

(iii)
Area of sector $= \frac{1}{2}r^2\theta = \frac{1}{2} \times 100 \times 1.2$ ✔

Shaded area
=Area of sector - Area of ΔOPR

$= 60 - \frac{1}{2} \times 10 \times 3.6235775 \times \sin 1.2$ ✔

$A = 43.12$ cm^2 (to 2 d.p.) ✔

(b) Volume about the x - axis is

$= \pi\left[\int_0^2 \left(\frac{x}{2}\right)^2 dx - \int_1^2 x - 1\, dx\right]$ ✔

$= \pi\left[\int_0^2 \frac{x^2}{4} dx - \int_1^2 x - 1\, dx\right]$

$= \pi\left\{\left[\frac{x^3}{12}\right]_0^2 - \left[\frac{x^2}{2} - x\right]_1^2\right\}$ ✔

$= \pi\left\{\left[\frac{8}{12} - 0\right] - \left[\left(\frac{4}{2} - 2\right) - \left(\frac{1}{2} - 1\right)\right]\right\}$ ✔

$= \pi\left\{\frac{1}{6}\right\}$

$\frac{\pi}{6}$ units^3 ✔

(6)(a)(i) $S_4 = \frac{4}{2}[2a + (4-1)d]$

$= 4a + 6d$ ✔

$T_4 = a + 3d$

$3 \times T_4 = 3a + 9d$

$4a + 6d = 3a + 9d$ ✔

Therefore, $a = 3d$ as required.

(ii) $T_{18} = 60; a = 3d$

$a + 17d = 60$

$3d + 17d = 60$

$20d = 60$ ✔

$d = 3$

$60 = a + 17 \times 3$

$60 = a + 51$ ✔

$a = 9$

(iii) $S_{18} = \frac{18}{2}(a + l)$ ✔

$= 9(9 + 60) = 621$ ✔

(b) To find the point of intersection solve the equations:

$y = e^{2x}$ and $y = e^{3-x}$

$e^{2x} = e^{3-x}$

$2x = 3 - x$

$3x = 3$

$x = 1$ ✔

$\text{Area} = \int_0^1 e^{3-x} - e^{2x}\, dx$

$= \left[\frac{e^{3-x}}{-1} - \frac{e^{2x}}{2}\right]_0^1$ ✔

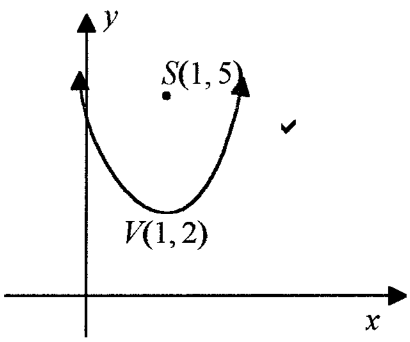
$= \left[\left(\frac{e^2}{-1} - \frac{e^2}{2}\right) - \left(\frac{e^3}{-1} - \frac{e^0}{2}\right)\right]$ ✔

$= \left[-e^2 - \frac{e^2}{2} - \left(-e^3 - \frac{1}{2}\right)\right]$

= 9.50 sq. units (to 2 d.p.) ✔

(c) $(x-h)^2 = 4a(y-k)$

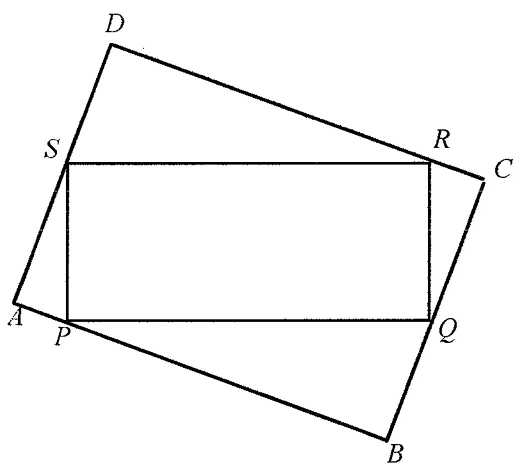
$V(1,2); a = 3$ ✔



✔

(7) (a) (i)

✔



(ii) Let $\angle BQP = x$

$\angle BPQ = 90 - x$

$\angle CQR = 180 - 90 - x = 90 - x$ (straight line)

$\angle QRC = 180 - 90 - (90 - x) = x$
(Angle sum of ΔRCQ) ✔

In $\Delta PBQ, \Delta QCR$

$\angle B = \angle C = 90$(Property of a rectangle) ✔

$\angle BPQ = \angle RQC = x$ (proven above)

Remaining angles are equal (Angle sum of triangle)

Therefore, $\Delta BPQ ||| \Delta RQC$ (Equiangular) ✔

(iii) Now taking ratios from similar triangles

$\frac{PQ}{QR} = \frac{BQ}{CR}$ ✔

Therefore, $PQ \times CR = BQ \times QR$ as required.

(iv) If $PQRS$ is a square, i.e. $PQ = QR$

thus $CR = BQ$ (from part (iii)) ; similarly ✔

$BP = PA$, thus P, Q, R and S are midpoints

and $ABCD$ is also a square (All sides equal and all angles are equal). ✔

(b)(i) Since $\angle BPA = 180^0 - 46^0 = 134^0$
(Straight line)

Using Sine rule,

$\frac{4}{\sin \angle BAP} = \frac{8}{\sin 134^0}$ ✔

$\angle BAP = 21^0$ (to the nearest deg). ✔

(ii) Let the perpendicular from D to AP at Q be h.

$\angle DAQ = 180^0 - 90^0 - 21^0$ (Straight line)

$= 69^0$ ✔

$\sin 69^0 = \frac{h}{3}$ ✔

$h = 2.8$ m (to 1 d.p.)

(8)(a) (i) $\frac{dy}{dx} = 12x - 9 - 3x^2$

Stationary points occur when $y' = 0$

$3x^2 - 12x + 9 = 0$ ✔

$x^2 - 4x + 3 = 0$

$(x-3)(x-1) = 0$

$\therefore x = 3$ or 1

$y = -1$ or -5 ✔

$\frac{d^2y}{dx^2} = 12 - 6x$

When $x = 3, f''(3) < 0$,
$\therefore$ Max. t.p. at $(3, -1)$ ✔

When $x = 1, f''(1) > 0$,
$\therefore$ Min t.p. at $(1, -5)$ ✔

(ii) Points of inflexion when $\frac{d^2y}{dx^2} = 0$

$\therefore 12 - 6x = 0$

$\therefore x = 2, y = -3$ ✔

Testing for concavity

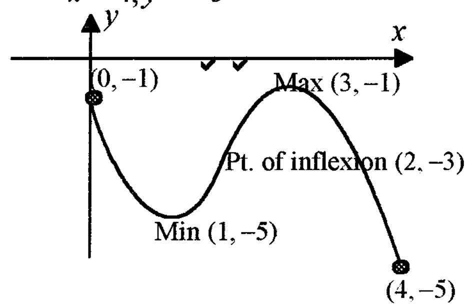
$f''(2^-) > 0, f''(2^+) < 0$

$\therefore$ change in concavity and $(2, -3)$ is a point of inflexion. ✔

(iv) For the domain $0 \le x \le 4$,

$x = 0, y = -1$

$x = 4, y = -5$



(b)(i) $N(t) = 10^6 e^{0.02t}$

$\frac{dN(t)}{dt} = 0.02(10^6 e^{0.02t})$

$= 0.02N(t)$ as $N(t) = 10^6 e^{0.02t}$ ✔

(ii) $2 \times 10^6 = 10^6 e^{0.02t}$

$2 = e^{0.02t}$

$\ln 2 = \ln e^{0.02t}$ ✔

$\ln 2 = 0.02t$

$t \approx 35$ sec (nearest sec) ✔

(iii) $\frac{dN}{dt} = 0.02N$

$= 0.02 \times 10^6 \times e^{0.02 \times 30}$

$= 36442$ cryptos/sec ✔

(9) (a) (i) When $v = 0$

$t(t-2) = 0$ ✔

$\therefore t = 0$ or $t = 2$

$\therefore\ t = 2$ sec ✔

(ii) $a = 2 - 2t$ ✔

When $t = 2$, $a = -2$ m/s^2 ✔

(iii) $x = t^2 - \dfrac{t^3}{3} + c$

When $t = 0, x = 0, c = 0$ ✔

At P, $x = 4 - \frac{8}{3} = 1\frac{1}{3}$ m ✔

(iv) $x = \left|16 - \frac{64}{3}\right| = 5\frac{1}{3}$ m ✔

$\therefore$ distance travelled is $2 \times 1\frac{1}{3} + 5\frac{1}{3} = 8$ m ✔

(b) (i) Let amount owing after n periods be A_n.

$\therefore\ A_1 = 40000(1.00625) - M$ ✔

$A_2 = A_1(1.00625) - M$

$= (40000(1.00625) - M)(1.00625) - M$

$= 40000(1.0625)^2 - M(1 + 1.00625)$ ✔

$= \$(40501.56 - 2.00625M)$ as required.

(ii) $\therefore A_{60} = 40000(1.00625)^{60} -$

$M(1 + 1.00625 + 1.00625^2 + \ldots + 1.00625^{59})$

At the end of the 60 months, $A_n = 0$

$$M = \frac{40000(1.00625)^{60}}{\left(1+1.00625+1.00625^2+\ldots+1.00625^{59}\right)}$$ ✔

$= \$801.52$ ✔

(10) (a) (i) Area of $TRPQ = 2xy$

Area of $STR = \frac{1}{2} \times \frac{3x}{4} \times 2x = \frac{6x^2}{8}$

$SR^2 = \left(\dfrac{3x}{4}\right)^2 + x^2$

$= \dfrac{9x^2}{16} + x^2$

$= \dfrac{9x^2 + 16x^2}{16}$

$SR = \dfrac{5x}{4}$ ✔

Perimeter of $PQRST$ is 30 cm

$$\therefore\ QR = y = \frac{30 - \left(2x + \frac{10x}{4}\right)}{2}$$

$$= \frac{30 - \left(\frac{8x + 10x}{4}\right)}{2}$$

$$= \frac{30 - \frac{18x}{4}}{2}$$

$$= \frac{120 - 18x}{8}$$

$= \dfrac{60 - 9x}{4}$ ✔

Area of $TRPQ$ is $2x\left(\dfrac{60 - 9x}{4}\right)$

Area of $PQRST$ is

$$A = \frac{60x - 9x^2}{2} + \frac{6x^2}{8}$$

$$= \frac{120x - 18x^2 + 3x^2}{4}$$

$= \dfrac{120x - 15x^2}{4}$ ✔

$$\frac{dA}{dx} = \frac{1}{4}(120 - 30x) = 0$$

$\therefore\ 30x = 120$

$\therefore\ x = 4$ ✔

$f'(4) < 0$, $\therefore$ maximum when $x = 4$.

$\therefore\ A = 120 - 60 = 60\text{ cm}^2$ ✔

(iii) $SM = \frac{3x}{4} = \frac{3 \times 4}{4} = 3$ ✔

$QR = \frac{120 - 18x}{8} = \frac{120 - 18 \times 4}{8}$
$= 6$

$\therefore\ SN = SM + QR = 9\text{ cm}$ ✔

(b) Limiting sum $= \frac{a}{1 - r}$

Numerator $= \frac{36}{1 - \left(-\frac{1}{2}\right)} = 24$

Denominator $= \frac{36}{1 - \frac{1}{3}} = 54$ ✔

$\therefore$ Ratio $= \frac{24}{54} = \frac{4}{9}$. ✔

(c) $y = \ln\left(\frac{x}{x-1}\right) = \ln x - \ln(x-1)$

$\frac{dy}{dx} = \frac{1}{x} - \frac{1}{x-1}$

$= \frac{(x-1) - x}{x(x-1)} = \frac{-1}{x(x-1)}$ ✔

At $x = 2$, $\frac{dy}{dx} = \frac{-1}{2(2-1)} = -\frac{1}{2}$

$\therefore$ the equation of the tangent to the curve at $x = 2$ is

$y - \ln 2 = -\frac{1}{2}(x - 2)$ ✔

$2y - 2\ln 2 = -x + 2$

$x + 2y - 2(\ln 2 + 1) = 0$ ✔