MATHEMATICS PAPER I

2026 CWED MOCK MARKING KEY

1. $r(2r^2-mr-3m^2)$ M1

   $r(2r^2-3mr+2mr-3m^2)$ M1

   $r[r(2r-3m)+m(2r-3m)]$ M1

   $r[(2r-3m)(r+m)]$ A1

2. ¿ $\frac{4}{8-2\sqrt{6}} \times \frac{8+2\sqrt{6}}{8+2\sqrt{6}}$ M1

   ¿ $\frac{32+8\sqrt{6}}{64-24}$ M1

   ¿ $\frac{32+8\sqrt{6}}{40}$ M1

   ¿ $\frac{8(4+\sqrt{6})}{40}$

   ¿ $\frac{4+\sqrt{6}}{5}$ A1

3. $(x^{\sqrt{bx}})^2=y^{\frac{x}{2}})^2$ M1

   $x^{bx}=y^x$ M1

   $(x^b)^x=y^x$ M1

   $\sqrt[x]{(x^b)^x}=\sqrt[x]{y^x}$ M1

   $x^b=y$ A1

4. $m=\frac{5t+2-(t+2)}{3t-2}=\frac{4t}{2t}=2$ M1 M1

   $using\ y=mx+c$

   $t+2=2t+-1$ M1

   $t=3$ A1

5. $a.f=16$

   $sf=\sqrt{16}=4$ M1

   $hs=\frac{32}{4}=8\,cm$ M1 M1 A1

6. $f(5)=\sqrt{5a+b}=3$ M1 M1

   $5a+b=9$ .....(1)

   $f(8.5)=\sqrt{8.5a+b}=4$

   $8.5a+b=16$ .....(2)

   Solving (1 and (2)

   8.5a + b = 16

-5a + b = 9 M1

3.5 = 7 M1

a = 2 and b = -1 A1 A1

7. $S_1=8-2^{3-1}=8-4=4$ M1 M1

$S_2=8-2^{3-2}=8-2=6$

$T_1+T_2=6$

$T_1=6-4=2$ A1

Common ratio $r=\frac{2}{4}=\frac{1}{2}$ M1 A1

8. $\overrightarrow{AB}=\overrightarrow{OB}-\overrightarrow{OA}=\begin{pmatrix}3\\2\end{pmatrix}-\begin{pmatrix}-4\\1\end{pmatrix}=\begin{pmatrix}7\\1\end{pmatrix}$ M1 M1

$\left|\overrightarrow{AB}\right|=\sqrt{7^2+1^2}=\sqrt{50}=5\sqrt{2}$ M1 M1 A1

9. $2L+\begin{bmatrix}-2 & 0\\1 & -1\end{bmatrix}\begin{bmatrix}-2 & 0\\1 & -1\end{bmatrix}=4\begin{bmatrix}-1 & 2\\3 & 1\end{bmatrix}$ M1

$2L+\begin{bmatrix}4+0 & 0+0\\-2-1 & 0+1\end{bmatrix}=\begin{bmatrix}-4 & 8\\12 & 4\end{bmatrix}$ M1

$2L+\begin{bmatrix}4 & 0\\-3 & 1\end{bmatrix}=\begin{bmatrix}-4 & 8\\12 & 4\end{bmatrix}$ M1

$2L=\begin{bmatrix}-4 & 8\\12 & 4\end{bmatrix}-\begin{bmatrix}4 & 0\\-3 & 1\end{bmatrix}$ M1

$2L=\begin{bmatrix}-8 & 8\\15 & 3\end{bmatrix}$

$L=\begin{bmatrix}-4 & 4\\7.5 & 1.5\end{bmatrix}$ A1

10. <CBD = ½ 50° = 25 M1

<ODC = (180 – 50)/2 = 130/2 = 65°

<ABC = 180 – (20 + 65) = 95° M1

Y = 95° – 25° = 70° ..... ΔBMC ≡ ΔDMC M1 A1

<ODB = 65° – 25° = 40°

X + 70 + 40 + 20 = 180° M1

X = 50° A1

11. $\frac{2a+3a+9a-3+9}{4}=3a+1$ M1

$15a-2=4(3a+1)$ M1

$15a-2=12a+4$

$3a=6$ M1

$a=2$ A1

12. $3x^2-7x-1=0$ M1

$$x=\frac{-(-7)\pm\sqrt{(-7)^2-4(3)(1)}}{2(3)}$$ M1

$$x=\frac{7\pm\sqrt{61}}{6}=\frac{7-\sqrt{61}}{6}\vee\frac{7+\sqrt{61}}{6}=-0.14\vee 2.47$$ M1 M1 A1

13. $r^2 = (25 - r)^2 + (10/2)^2$ .....Pythagoras theorem M1 M1

$r^2 = 625 – 50r + r^2 + 25$ M1

$50r = 650$ M1

$r = 13cm$ A1

14. for A: $s = ½ (10 + 20)8 = ½ (30)(8) = 120m$ M1 M1

for B: $s = ½ (8 + 3)30 = 165m$ M1

differences = 165 – 120m = 45m M1 A1

15. $3x^2 + 12x + 5 = P(x^2 + 2xq + q^2) + r$ M1

$= px^2 + 2xpq + pq^2 + r$

Comparing coefficients

X^2: $p = 3$ A1

$2pq = 12$

$q = 12/2(3)$ M1

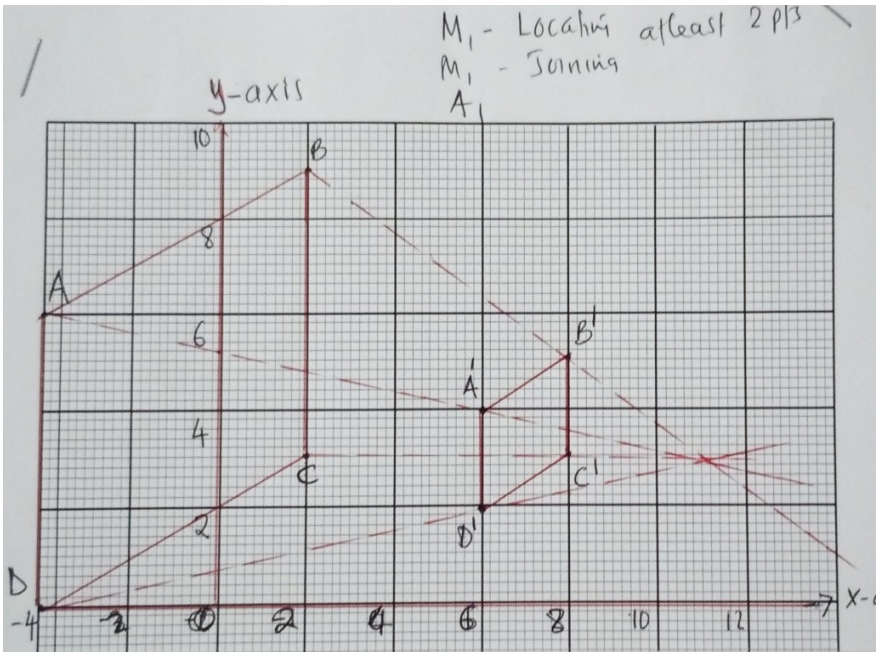
$q = 2$ A1

$r + pq^2 = 5$

$r + 3(2)^2 = 5$

$r = 5 – 12 = -7$

16. i.



ii. 1. (11,3) M1 A1

2. Sf = 2/6 =1/3 B1

17. $h=\frac{KV}{r^2}$ M1

$14=\frac{k\times 132}{3^2}$ M1

$K=\frac{126}{132}=\frac{21}{22}$ M1

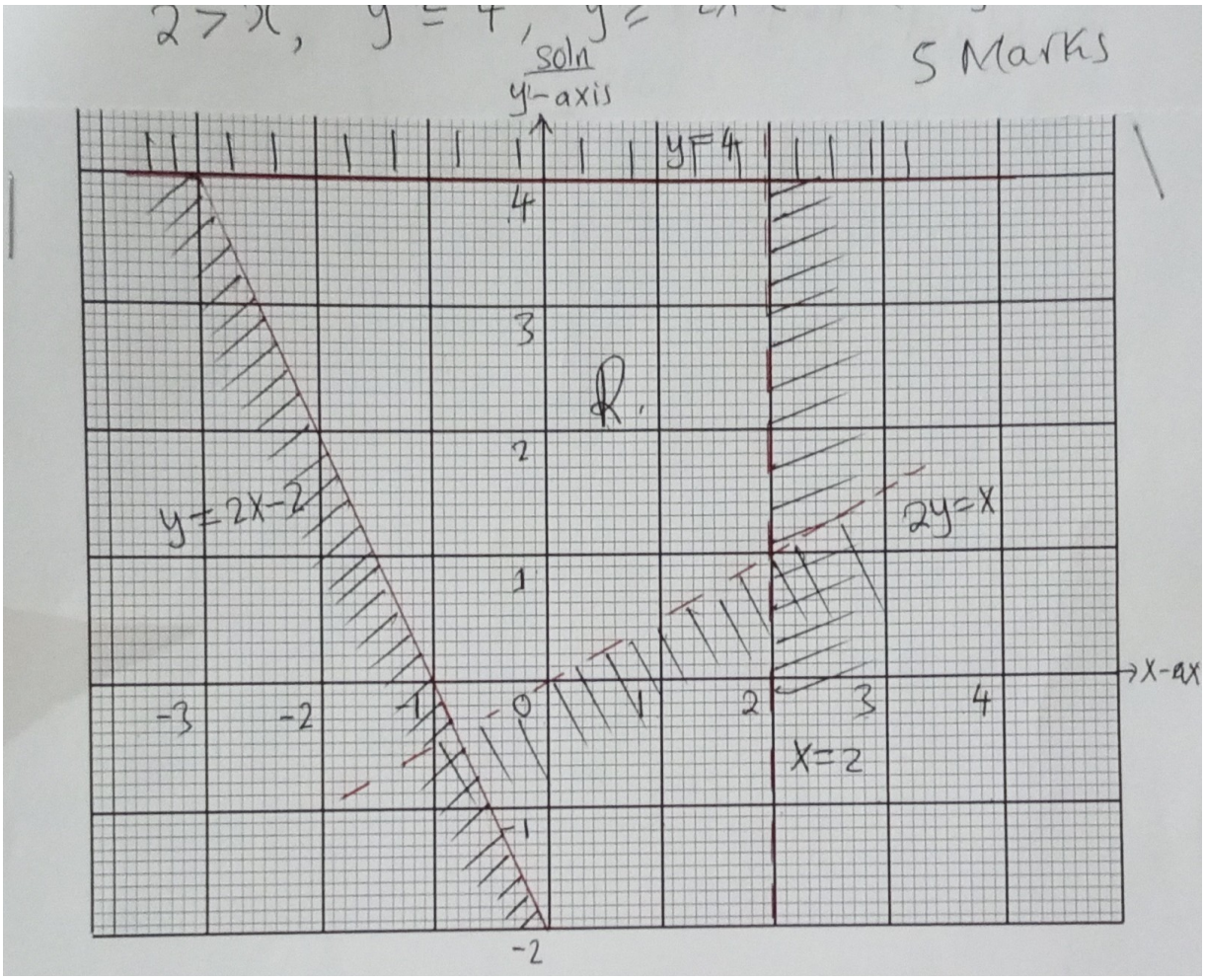
Relationship $h=\frac{21}{22}\frac{V}{r^2}$ M1

$12=\frac{21}{22}\times\frac{616}{r^2}$

$r^2=\frac{21\times 616}{12\times 22}$ M1

$r=\sqrt{49}=7$ M1 A1

18.



M1 – any of single variable line

M1 – any line in two variables

M1 – scale

M1 – correct shading

A1

19. $10^2=6^2+h^2$

$h=\sqrt{64}=8\,cm$ M1

volume of cylinder = volume of cone + volume of hemisphere

$\pi r^2 h=\frac{1}{3}\pi r^2 h+\frac{2}{3}\frac{4}{3}\pi r^3$ M1 M1

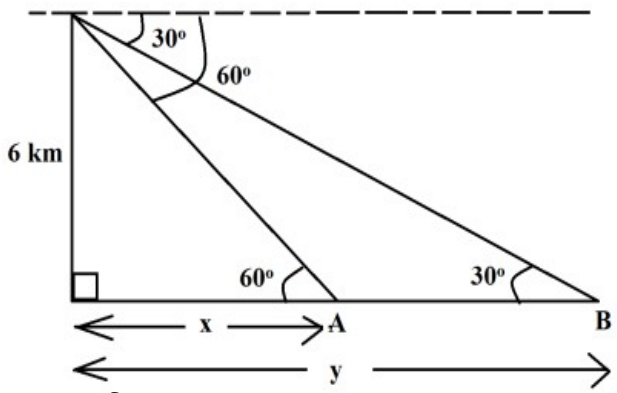
$\pi r^2(3.84)=\frac{1}{3}\pi 6^2(8)+\frac{8}{9}\pi 6^2$

$15\pi r^2=240\pi$ M1

$r^2=16$ M1

$r=4$ A1

20.



$\tan 30=\frac{6}{y}$

$y=\frac{6}{\tan 30}$ M1

$\tan 60=\frac{6}{x}$

$\therefore x=\frac{6}{\tan 60}$ M1

$AB=\frac{6}{\tan 30}-\frac{6}{\tan 60}$ M1

$AB=6.938=6.93\,km$ A1