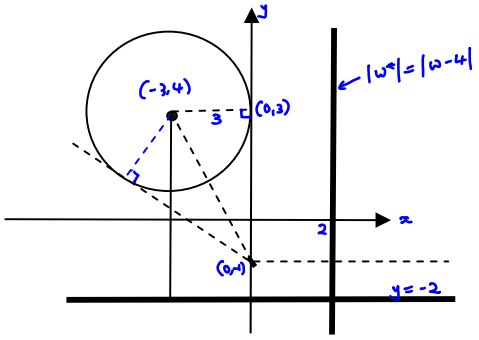
ANNEX B

AJC H2 Maths Preliminary Examination Paper 2

Qn/No	Topic Set	Answers
1	Differential Equations	(ii) 89.0 litres (iii) 141 litres
2	Functions	(a) (i) $f^{-1}(1) = 0$ (ii) $y = x + 1$ (iii) $y = x - 1$ (b) (i) [-11, 5] (ii) $a = -12$
3	Vectors	(ii) $\overrightarrow{OC} = \frac{1}{3}\begin{pmatrix} -10 \\ -3 \\ 7 \end{pmatrix}$ (iii) $\sqrt{\frac{122}{23}}$
4	Complex numbers	(i)  (ii) $\frac{\pi}{2} \le \arg(z+i) \le 2.65$ (iii) See diagram in (i), 3
5	Vectors	(i) 0 (iii) $a = -1$ and $b = 4$ (iv) $\mathbf{r}\cdot\begin{pmatrix} 4 \\ 5 \\ -1 \end{pmatrix} = 4\sqrt{42}$ or $\mathbf{r}\cdot\begin{pmatrix} 4 \\ 5 \\ -1 \end{pmatrix} = -4\sqrt{42}$
6	P & C	(i) 2721600 (ii) 114660
7	Sampling Mean & methods	(i) 0.209
8	Linear Regression & correlation	(ii) 0.940 (iii) $A = 5.53, \quad B = 0.0476$ (iii) 26.9%

9	Normal distribution	(i) 0.852, The distributions of the lifespans of all televisions are independent of each other. (ii) 0.160 (iii) 10 (iv) (I) will be greater as $A > 25000$ and $B > 25000$ is a subset of $A+B > 50000$.
10	Poisson Distribution	(ii) 0.04861075 (iii) 0.0464 (iv) \$16.30 (v) 0.0974
11	Probability	(ii) $\frac{2}{9}$ (iii) $\frac{7}{9}$ (iv) $\frac{1}{2}$ (v) Mary is not expected to make a profit as she is expected to lose \$10.00 in the game
12	Hypothesis Testing	(i) 3.73, 0.177 (ii) $p = 0.0504$, reject H_o (iii) same (iv) 4 hours 29 mins