Question	Answer	Marks	Guidance
1	$p^0q^{-5}r^{-\frac{2}{3}}$	**3**	**B1** for $a=0$ **B1** for $b=-5$ **B1** for $c=-\frac{2}{3}$
2(a)		**2**	**B1** for symmetrical V shape in the correct quadrant, touching the x-axis. Must have straight lines. **B1** for $x=\frac{4}{3}$ and $y=4$ only, either seen or stated on a modulus graph.
2(b)	$x\leqslant -1,\ x\geqslant\frac{11}{3}$ or 3.67 or better	**3**	**B1** for –1 from a correct method. **B1** for $\frac{11}{3}$ or 3.67 or better, from a correct method.
3(a)	$\overrightarrow{AC}=\mathbf{c}-\mathbf{a}$	**B1**	May be implied
	$\overrightarrow{OP}=\mathbf{a}+\frac{3}{5}\overrightarrow{AC}$ or $\mathbf{c}-\frac{2}{5}\overrightarrow{AC}$	**M1**	Maybe implied, for correct use of ratio $\overrightarrow{OP}=\mathbf{a}+\frac{3}{5}\left(their\,\overrightarrow{AC}\right)$ or $\mathbf{c}-\frac{2}{5}\left(their\,\overrightarrow{AC}\right)$
	$\overrightarrow{OP}=\frac{2}{5}\mathbf{a}+\frac{3}{5}\mathbf{c}$	**A1**	Allow unsimplified
3(b)	$\overrightarrow{OP}=\frac{2}{5}\mathbf{b}$ oe	**B1**	
	$\frac{2}{5}\mathbf{b}=\frac{2}{5}\mathbf{a}+\frac{3}{5}\mathbf{c}$ $2\mathbf{b}=2\mathbf{a}+3\mathbf{c}$	**B1**	**Dep** on previous B mark for equating vectors and rearrangement to obtain **AG**
	Alternative $\mathbf{b}=\frac{2}{5}\mathbf{a}+\frac{3}{5}\mathbf{c}+\frac{3}{5}\mathbf{b}$	**(B1)**	Need a clear indication of the method used, in the form of a correct unsimplified statement.
	$2\mathbf{b}=2\mathbf{a}+3\mathbf{c}$	**(B1)**	**Dep** for simplification to obtain AG