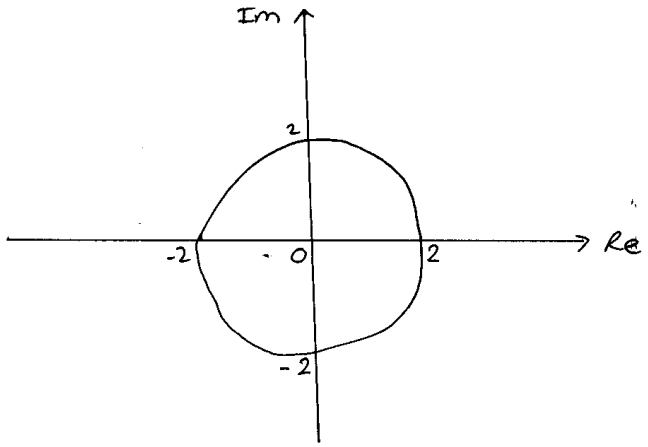
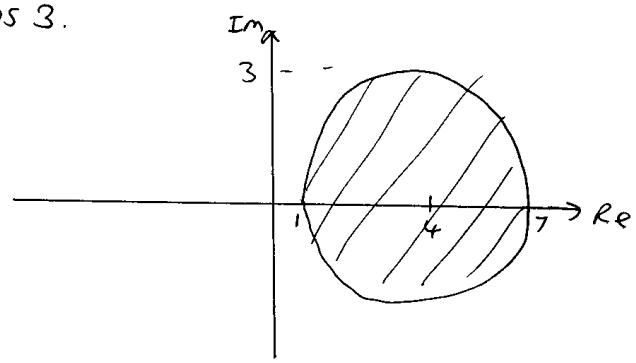
Further Pure 1

Complex Numbers
Exercise D

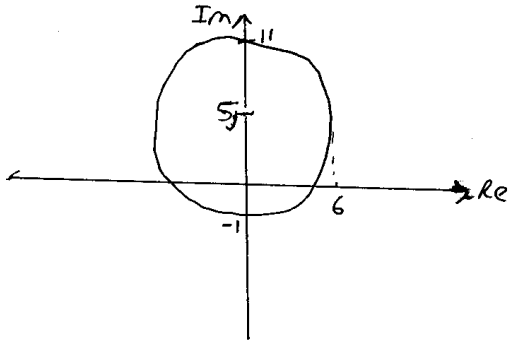
1(i) $|z| = 2$ represents a circle, centre O, radius 2.



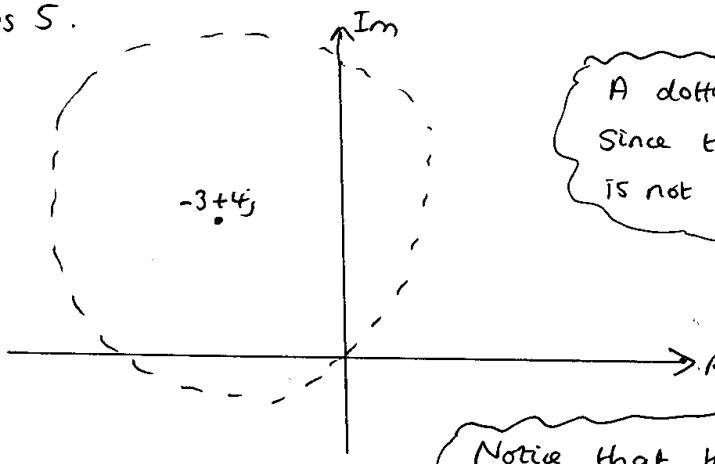
(ii) $|z-4| \leq 3$ represents a circle and its interior, centre 4, radius 3.



(iii) $|z-5j| = 6$ represents a circle, centre $5j$, radius 6



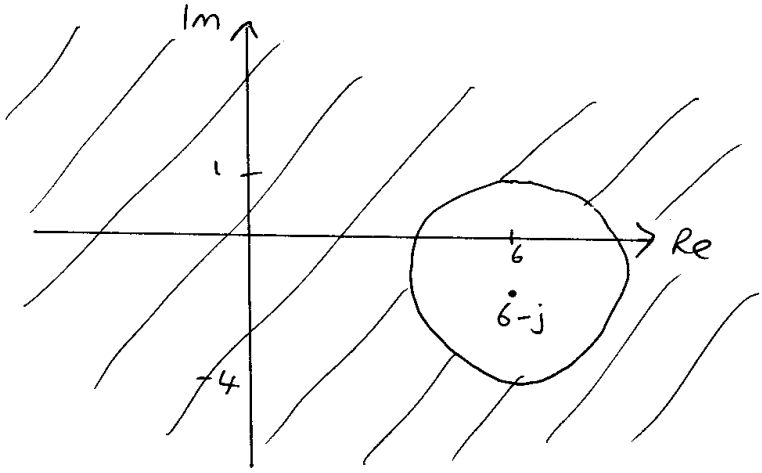
(iv) $|z+3-4j| < 5$ represents the interior of a circle, centre $-3+4j$, radius 5.



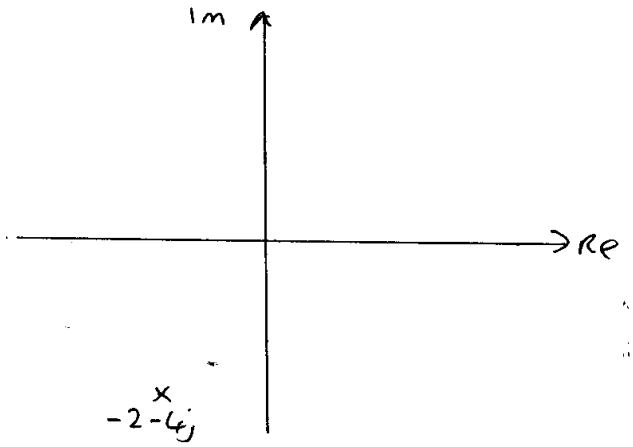
A dotted line is used since the circle itself is not included

Notice that the circle passes through the origin as $\sqrt{(3^2+4^2)} = 5$

(v) $|6-j-z| \geq 2$ represents a circle and its exterior, centre $6-j$, radius 2

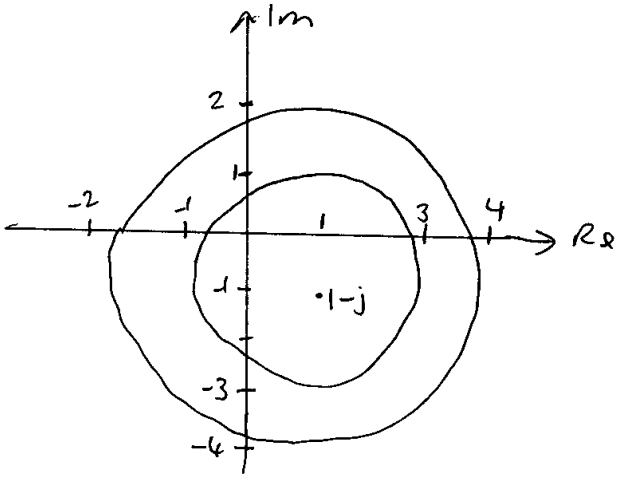


(vi) $|z+2+4j|$ represents the point $z = -2-4j$



This is a circle, centre $-2-4j$, radius 0!

(vii) $2 \leq |z-1+j| \leq 3$ represents two circles centre $1-j$ and the area between them. The inner circle has radius 2 and the outer circle has radius 3.



(viii) $Re(z) = -2$ represents all the points whose real part is -2. This is a vertical line through -2.