KEY

Section 1: Algebra

1.1 $-4 < a < 0$
1.2 c
1.3 a, c
1.4 b, c
1.5

$$\begin{bmatrix} 1 & 1 & 1 & 1 \\ 0 & 1 & 2 & 3 \\ 0 & 0 & 1 & 3 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

1.6 4
1.7 a, c
1.8 a, c
1.9 a, b, c
1.10 $(p^2-1)(p^2-p)$

Section 2: Analysis

2.1 $f(1) - f(0)$
2.2 (a) divergent;(b) absolutely convergent; (c) conditionally convergent
2.3 b, c
2.4 (a) not differentiable; (b) continuously differentiable; (c) continuously differentiable
2.5 $-\frac{1.3.5}{2.4.6}\frac{1}{7}$
2.6 a, b, c
2.7 $\frac{1}{2}(4^{\frac{1}{3}}-1)$
2.8 $-4+2\pi i$
2.9 order = 3; residue = 1/6
2.10 $8\pi i$

Section 3: Geometry

3.1 $\frac{c}{\sqrt{a^2+b^2}}$
3.2 4
3.3 $8h^2 = 9ab$
3.4 $c^2 = a^2(1+m^2)$
3.5 $\frac{a^2 y_1}{b^2 x_1}$
3.6 semi-major axis = 2; semi-minor axis = 1
3.7 4π
3.8 $(-3, 4, -1)$
3.9 7π
3.10 $\frac{2}{3}r$
Note: Please accept any answer which is correct, but expressed in an equivalent, though different, form, where applicable.