1. Determine if the statement is True or False and give a (short) supporting reason.

   (a) The singularities of $\csc z$ are all simple poles.

   (b) $\sin z/z$ has a removable singularity at $z = 0$ and is thus really an entire function.

   (c) If $z = 0$ is a pole of order 5 for $f(z)$, then $f(1/z)$ is a polynomial of degree 5.

   (d) For $a > 0$, $\int_{-\infty}^{\infty} (a^2 + \theta^2)^{-1} \, d\theta = \pi/a$

   (e) If $g(z)$ is entire, then the residue of $f(z)g(z)$ at $z = z_0$ is the residue of $f(z)$ at $z = z_0$ times $g(z_0)$.

   (f) $(\sum a_n z^n)(\sum b_n z^n) = \sum a_n b_n z^{2n}$

   (g) In the region where sides are defined, $1/(1 + z + z^2 + z^3 + \cdots) = 1 - z$

   (h) If $f(z)$ is bounded near its singularity at $z = z_0$ then $z = z_0$ is a pole for $f(z)$.

   (i) The residue of $\operatorname{Log} z$ at $z = 0$ is 1.

   (j) The residue of $\exp(iz)/z$ at $z = 0$ is $1/2$