p1alg

What are the partial fraction decompositions(sum of terms of the forms $\frac{A}{(z-a_i)^{k_i}}$) for

a) f(z)= $\frac{1}{z^4-z^2}$

b) f(z)= $\frac{1}{z^2+1}$

c) What are the values of $\int_{|z|=4} f(z)\,dz$ for the above choices of f(z)?

2. Find $\int_{|z|=2_o} \frac{zdz}{z^2+1}$ by

a) residual calculation

b) by writing $\frac{z}{z^2+1} = \frac{1}{2}\frac{d}{dz}\log(z^2+1)$. Why are the results the same?

c) Same question for $\int_{|z|=\frac{1}{2}} \frac{zdz}{z^2+1}$