$$u(\rho,\phi)=u(p)=\frac{1}{2\pi i}\oint\left(\frac{1}{z-p}-\frac{1}{z-\frac{1}{p}}\right)f(z)dz$$

$$=\frac{1}{2\pi i}\oint\left(\frac{p-\frac{1}{p}}{(z-\frac{1}{p})(z-p)}\right)f(z)dz$$

$$=\frac{1}{2\pi i}\oint\left(\frac{p-\frac{1}{p}}{z^2-(\frac{1}{p}+p)z+1}\frac{\frac{p}{z}}{\frac{p}{z}}\right)f(z)dz$$

$$=\frac{1}{2\pi i}\oint\left(\frac{p^2-1}{(z+\frac{1}{z})p-(p^2+1)}\right)f(z)\frac{dz}{z}$$

$$=\frac{1}{2\pi i}\int_{c_1+c_2+c_3+c_4}\left(\frac{p^2-1}{(z+\frac{1}{z})p-(p^2+1)}\right)f(z)\frac{dz}{z}$$

$$=\frac{1}{2\pi i}\int_{c_2}\left(\frac{p^2-1}{(z+\frac{1}{z})p-(p^2+1)}\right)f(z)\frac{dz}{z}$$

$$=\frac{1}{2\pi i}\oint\left(\frac{p^2-1}{(z+\frac{1}{z})p-(p^2+1)}\right)f(z)\frac{dz}{z}$$

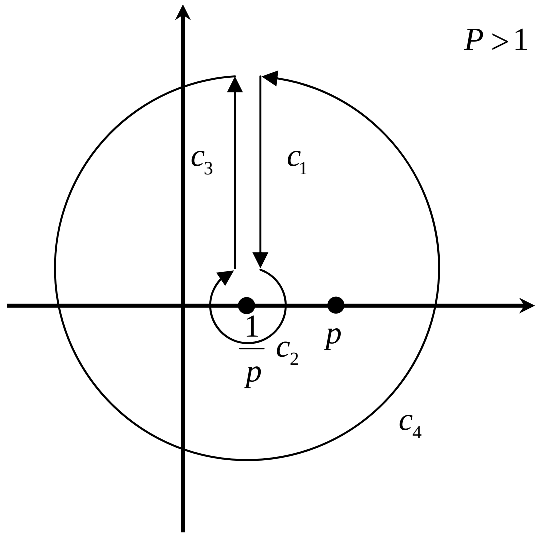
$\because z=e^{i\theta},dz=ie^{i\theta}d\theta$

$$u(\rho,\phi)=\frac{1}{2\pi i}\oint\left(\frac{p^2-1}{(z+\frac{1}{z})p-(p^2+1)}\right)f(z)\frac{dz}{z}$$

$$=\frac{1}{2\pi}\int_{2\pi}^{0}\left(\frac{p^2-1}{-(p^2+1)+2p\cos\theta}\right)f(\theta)d\theta$$

$$=\frac{1}{2\pi}\int_{2\pi}^{0}\left(\frac{1-p^2}{(p^2+1)-2p\cos\theta}\right)f(\theta)d\theta$$

$$=\frac{1}{2\pi}\int_{0}^{2\pi}\left(\frac{p^2-1}{(p^2+1)-2p\cos\theta}\right)f(\theta)d\theta$$



exterior 1.doc, 06/12/06　方衛尉製表