Panel 1

Complex HW #18

① Use appropriate Thms to evaluate: and state which one you use!

a) $\int_C \frac{te^{z^3}}{(z-4)^2}\,dz$, C is circle centered at zero with radius 1

b) $\int_C \frac{z^2\cos(z)}{(z-\pi)^2(z-\pi/2)}\,dz$, C is a circle centered at zero with radius 2

c) $\int_C \frac{z^3-2z^2+z}{(z-1)^5}\,dz$, C is a circle centered at zero with radius 3

Panel 2

② Find the Taylor series centered at $z_0=0$ (also called McLaurin series) for the following functions:

a) $f(z)=\cosh(z)$ b) $g(z)=z^3e^{(2z)}$ c) $h(z)=\frac{z^2}{1-z}$

③ Find the limit of the following series:

a) $\sum_{n=0}^{\infty}\left(\frac{i}{2}\right)^n$ b) $\sum_{n=4}^{\infty}\left(\frac{7}{10}\right)^n$ c) $\sum_{n=0}^{\infty} g^n/n!$

④ Find $\lim_{z\to 0}\frac{e^z-1-z}{z^2}$ without using l'Hospital's rule