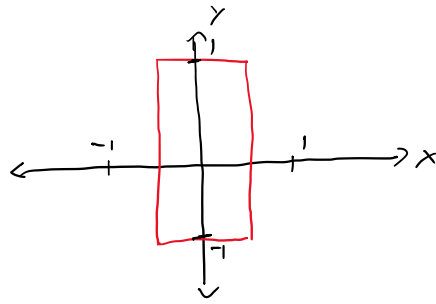


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$$\oint_C \frac{\cos z}{z^4 - 1} dz \text{ dengan}$$

$C :$



Titik singular :

$$z^4 - 1 = 0$$

$$(z^2 - 1)(z^2 + 1) = 0$$

$$(z - 1)(z + 1)(z - i)(z + i) = 0$$

$z = 1 ; z = -1 ; z = i ; z = -i \rightarrow$  nilai  $z$  yang memenuhi terhadap  $C :$   
 $z = i ; z = -i$

$$\oint_C \frac{\cos z}{(z^2 - 1)(z - i)(z + i)} dz = 2\pi i \left[ \text{Res}(f(z), i) + \text{Res}(f(z), -i) \right]$$

$$\text{Res}(f(z), i) = \lim_{z \rightarrow i} \frac{\cos z}{(z^2 - 1)(z + i)} = \frac{\cos i}{-2 \cdot 2i} = \frac{\cos i}{-4i}$$

$$\text{Res}(f(z), -i) = \lim_{z \rightarrow -i} \frac{\cos z}{(z^2 - 1)(z - i)} = \frac{\cos i}{-2 \cdot -2i} = \frac{\cos i}{4i}$$

karena  $\cos x = \frac{e^{ix} + e^{-ix}}{2}$ , maka  $\cos i = \frac{e^{-1} + e}{2}$  sehingga

$$\text{Res}(f(z), i) = \frac{e^{-1} + e}{-4i} \text{ dan } \text{Res}(f(z), -i) = \frac{e^{-1} + e}{4i}$$

$$\oint_C f(z) dz = 2\pi i \left( \frac{e^{-1} + e}{-4i} + \frac{e^{-1} + e}{4i} \right)$$

$$\oint_C f(z) dz = 2\pi i (0)$$

$$\oint_C f(z) dz = 0$$