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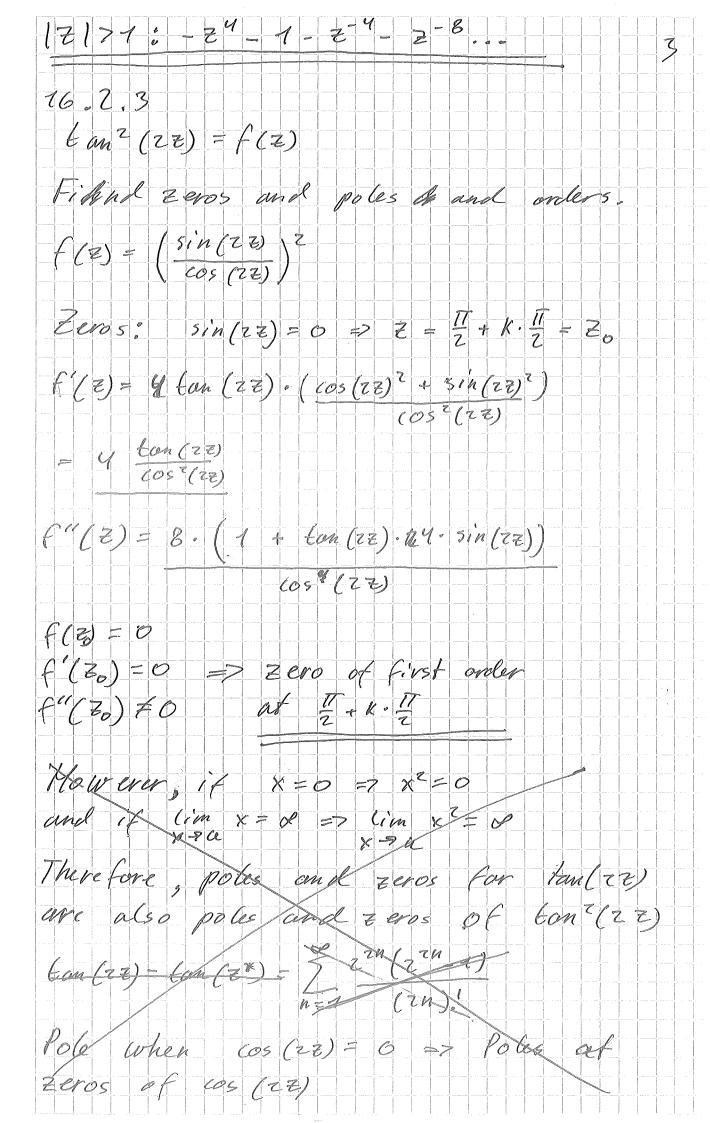
$$18 - 3 = 1$$

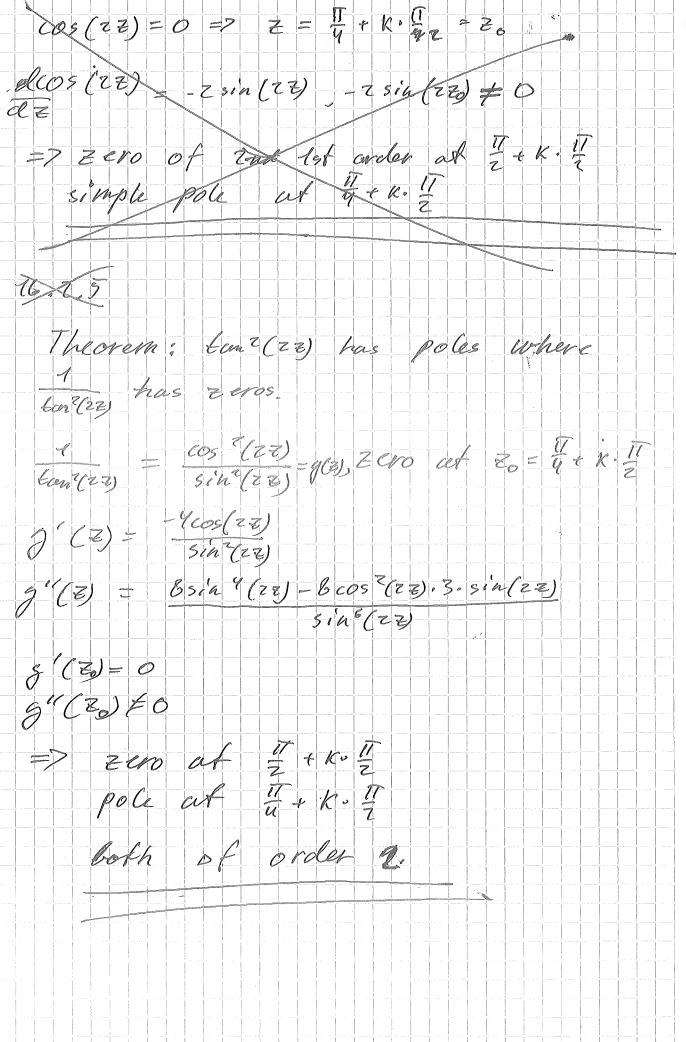
$$18 - 3 = 1$$

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((Z) = (Z+Zi)2 , Zo = -Zi => Q((Zo) = 0 ((z) = z (z + zi)) = ((zo) = 0=7 - Zi is a pole of degree Z Now: h(2) . For now, assume that her 70 has not same zeros as g(=).
For zo being zero for g(z) g(z) = (z-c) = ; zo = c 5(20) =0 c is a pole of degree 2 h(z) = -22+2i+2+7 h(c)=1-1+c+1+0 16.3.1) f(z) = sin(zz) use togter for sin(zz)  $= 7 + (2) = \frac{7}{26} \cdot \sum_{n=0}^{\infty} (-1)^n (2)^{2n+1} \cdot (2n+1)!$  $=\frac{4}{26}, (22)^{3}, (22)^{5}, (22)^{7}$   $=\frac{2}{25}, \frac{2}{3!23}, \frac{2}{5!2}, \frac{2}{7!}, ...$ The principal part, the serms with negative powers: 2 2 2 2 5.12 6, 63 + 65 => pole at 2=0 of order
2 + 23 + 25 => pole at 2=0 of order

Residue: Rest(z) = 
$$B_{1} = \frac{z^{5}}{5!}$$

Singularity of  $z_{0} = 0$  (order 5)

16.3, 6,

(2-23 dz (:|z-(z+i)| = 3.2

2-23: no poles ore zeros in C.

2-4z-5 = 0 = 7 to = 2 t 3 = 5 Mm v = 7

Both points one last de C.

50, ((z) = \frac{z^{2}}{2!} \frac{4z}{45} \frac{1}{2} \frac{1}

Res 
$$f(z) = b_1 = \lim_{z \to z_0} (z - z_0) f(z)$$
 $z = z_0$ 
 $z \to z_$ 

Suptementary 
$$T$$

$$f(z) = \frac{1}{2} \cdot \frac{e}{z-1}, \quad z_0 = 1$$

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$$f(z) = \frac{1}{2} \cdot \frac{1}$$

Res = Cim 
$$\frac{z-z_0}{z+z_0} = \frac{4}{4}$$

For  $z_0 = z_0^2$ ,  $Res = \frac{1}{2}$ 

Cor  $z_0 = 1e^{i\frac{z}{2}}$ ,  $Res = \frac{1}{2}$ 

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So:  $s_0 = \frac{1}{2}e^{i\frac{z}{2}}$ ,  $Res = \frac{1}{2}$ 

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Write  $z_0 = e^{i\frac{z}{2}}$ ,  $e^{i\frac{z}{2}} = e^{i\frac{z}{2}}$ 
 $= \frac{1}{2}s_0$ 

Re(z)  $dz_0 = \frac{1}{2}e^{i\frac{z}{2}}$ 
 $= \frac{1}{2}s_0$ 

Re(z)  $dz_0 = \frac{1}{2}e^{i\frac{z}{2}}$ 
 $= \frac{1}{2}s_0$ 

Res =  $c_0$ 
 $= \frac{1}{2}s_0$ 
 $= \frac{1}{2}s_0$ 

Res =  $c_0$ 
 $= \frac{1}{2}s_0$ 
 $= \frac{1}$ 

