$\boxed{\begin{matrix}4.25\\ \text{פ9}\end{matrix}}$ ב 3.60 פ9 הורת שכרום הסורשים
(1) של מס קומפלקסי הוא 0.

$$z^5=-1 \quad /()^{20}$$

$$z^{100}=1$$

$$(z_1)^{101}+(z_2)^{101}+(z_3)^{101}+(z_4)^{101}+(z_5)^{101}=$$

$$z_1\cdot z_1^{100}+z_2\cdot z_2^{100}\cdot z_3\cdot z_3^{100}+z_4\cdot z_4^{100}+z_5\cdot z_5^{100}=$$

$$z_1+z_2+z_3+z_4+z_5=0$$

(2) $z^5=-1=cis180 \rightarrow z_i=cis\left(\frac{\pi}{5}+\frac{2\pi k}{5}\right),\ k=0,1,2,3,4$

הפתרון, ברביע השני מתקבל עבור $k=1$ $\quad w=cis\left(\frac{3\pi}{5}\right)$

$$|w^5+w^2|^2=\left|\left(cis\left(\tfrac{3\pi}{5}\right)\right)^5+\left(cis\left(\tfrac{3\pi}{5}\right)\right)^2\right|^2=\left|cis(3\pi)+cis\left(\tfrac{6\pi}{5}\right)\right|^2$$

$$=\left|-1+cis\left(\tfrac{6\pi}{5}\right)\right|^2=\left(\cos\left(\tfrac{6\pi}{5}\right)-1\right)^2+\sin^2\left(\tfrac{6\pi}{5}\right)=\cos^2\left(\tfrac{6\pi}{5}\right)-2\cos\left(\tfrac{6\pi}{5}\right)+$$

$$1+\sin^2\left(\tfrac{6\pi}{5}\right))=2-2\cos\left(\tfrac{6\pi}{5}\right)=2\left(1-\cos\left(\tfrac{6\pi}{5}\right)\right)=2\cdot 2\sin^2\left(\tfrac{3\pi}{5}\right)=$$

$$=4\sin^2\left(\tfrac{3\pi}{5}\right)$$