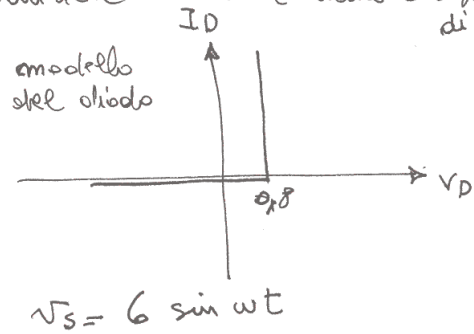
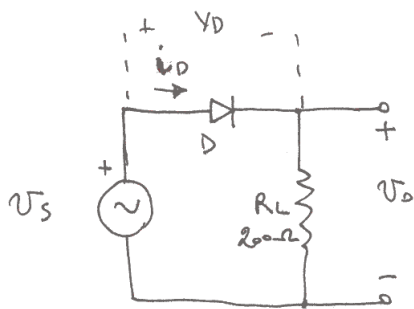


RADDRIZZATORE A UNA SEMIONDA

Determinare il valore medio e di picco di i_D



D OFF $i_D = 0$ $v_D < 0,8$
 $v_s = v_D + R_L i_D$

$v_s = v_D < 0,8$

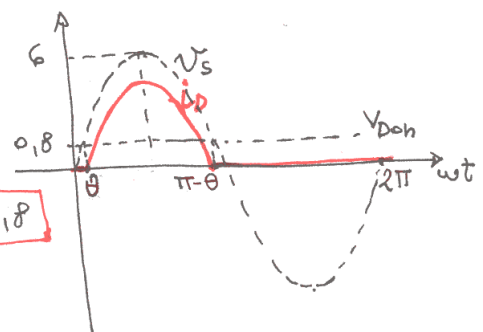
D ON $i_D > 0$ $v_D = 0,8$

$v_s = 0,8 + 200 \cdot i_D = 6 \sin wt$

$i_D = \frac{v_s - 0,8}{200} = \frac{6 \sin wt - 0,8}{200} > 0$

$v_s > 0,8$

$i_D = 30 \sin wt - 4$ [mA]



$I_{D_{avg}} = \frac{1}{2\pi} \int_{\theta}^{\pi-\theta} (30 \sin \alpha - 4) d\alpha = \frac{1}{2\pi} [-30 \cos \alpha - 4\alpha]_{\theta}^{\pi-\theta} =$

$= \frac{1}{2\pi} [(-30 \cos(\pi-\theta) - 4(\pi-\theta)) - (-30 \cos \theta - 4\theta)] =$

$= \frac{1}{2\pi} [30 \cos \theta - 4\pi + 4\theta + 30 \cos \theta + 4\theta] =$

$= \frac{1}{2\pi} [60 \cos \theta + 8\theta - 4\pi] =$

$= \frac{1}{2\pi} [59,45 + 1,04 - 12,57] \approx 7,63 \text{ mA}$

$I_{D_{pk}} = 26 \text{ mA}$

$V_p \sin \theta = V_f$

$\theta = \arcsin \frac{V_f}{V_p}$

$= \arcsin \frac{0,8}{6}$

$= 7,7^\circ$

$= 0,13 \text{ rad}$