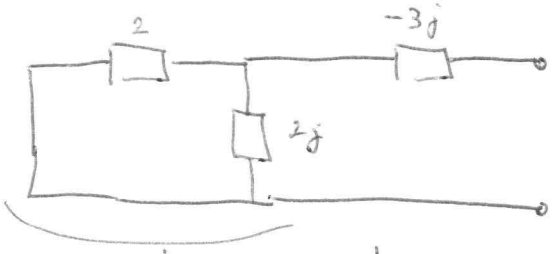
(1)



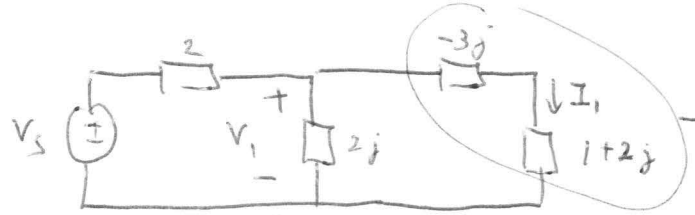
Z_{TH}

$$\hookrightarrow Z_1 = \frac{1}{\frac{1}{2}+\frac{1}{2j}} = \frac{4j}{2+2j} = \frac{2j}{1+j} = \frac{2j(1-j)}{2} = 1+j$$

$$\Rightarrow Z_{TH} = Z_1 - 3j = 1-2j$$

MAX POWER: $\boxed{Z_L = Z_{TH}^* = 1+2j}$

(2) OPTION 1:



$\rightarrow Z_2 = 1-j$

$$\hookrightarrow Z_3 = \frac{1}{\frac{1}{2j}+\frac{1}{1-j}} = \frac{2j(1-j)}{1-j+2j} = \frac{2j+2}{1+j} = 2$$

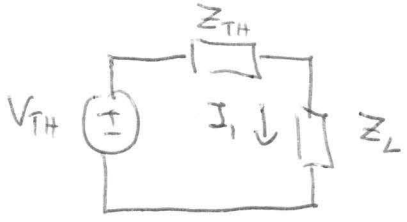
$$V_1 = V_S \frac{Z_3}{Z_3+2} = \frac{V_S}{2}$$

$$I_1 = \frac{V_1}{Z_2} \quad \Rightarrow \quad S_L = \frac{1}{2} Z_L \cdot |I_1|^2 = \frac{1}{2}(1+2j)\frac{|V_S|^2}{4}\cdot\frac{1}{|Z_2|^2}$$

$$= \frac{1}{2}\cdot\frac{64}{4}\cdot\frac{1}{2}(1+2j)$$

$$\boxed{S_L = 4+8j}$$

OPTION 2: FIND $V_{TH} \Rightarrow V_{OC} = V_S \cdot \frac{2j}{2+j} = V_S \cdot \frac{j}{1+j} = V_{TH}$



$$I_1 = \frac{V_{TH}}{Z_{TH}+Z_L} = \frac{V_{TH}}{(1-2j)+(1+2j)} = \frac{V_{TH}}{2}$$

↳ AS EXPECTED

$$S_L = \frac{1}{2} Z_L |I_1|^2 = \frac{1}{2}(1+2j)\frac{|V_{TH}|^2}{4} = \frac{(1+2j)}{8}|V_S|^2\frac{|j|^2}{|1+j|^2}$$

$$S_L = (1+2j)\cdot\frac{64}{8}\cdot\frac{1}{2} \quad \Rightarrow \quad \boxed{S_L = 4+8j}$$