Bonus problems to solve

Consider the content of the sub-chapter " Frequency properties of discrete models" in the Lecture Outline and try to solve the following problems:

1. Prove that the complex admittance $\underline{Y}_d(j\omega)$ (2.17) of discrete inductance model obtained by use of trapezoidal approximation is determined by the formula:

$$\underline{Y}_d(j\omega) = \frac{\underline{i}(j\omega)}{\underline{u}(j\omega)} = \frac{\dfrac{T}{2}}{Ljtg\dfrac{\omega T}{2}}$$

2. Derive the complex admittance $\underline{Y}_d(j\omega)$ of the discrete inductance model obtained by use of explicit Euler's method (forward approx. of continuous derivative - (1.5)). For this model sketch the diagram like Fig.9 in the Lecture Outline.

   Correct solution of both problems will be rewarded by 1 point that will be added to pass test mark. It can turn out to be the 'golden point'!

The deadline for submission of solutions: the first lecture after Easter.