DGD1- Circuit Models of Amplifiers

Q1. Consider an amplifier operating from +/-10V power supplies. It is fed with a sinusoidal voltage having 1V peak and delivers a sinusoidal voltage output of 9V peak to a 1-$k\Omega$ load. The amplifier draws a current of 9.5mA from each of its two power supplies. The input current of the amplifier is found to be sinusoidal with 0.1 mA peak. Find the voltage gain, the current gain, the power gain, the power drawn from the dc supplies, the power dissipated in the amplifier, and the amplifier efficiency.

Q2. A transducer characterized by a voltage of 1V rms and a resistance of 1 $M\Omega$ is available to drive a 10-Ω load. If connected directly, what voltage and power levels result at the load? If a unity-gain (i.e., A_{vo} =1) buffer amplifier with 1 $M\Omega$ input resistance and 10-Ω output resistance is interposed between source and load, what do the output voltage and power levels become? For the new arrangement, find the voltage gain from source to load, and the power gain (both expressed in decibels).