EE 230 — HW 1.2 Name_____

You have a source which outputs a signal with a 10-mV amplitude. The source output resistance is 10 kΩ (R_S = 10 kΩ). You want to amplify this signal and deliver it to a 1-kΩ load (R_L = 1 kΩ). To do the amplification, you have a large number of identical amplifier components. The amplifiers each have gain of 10 (A = 10), input resistance of 10 kΩ (R_i = 10 kΩ), and output resistance of 1 kΩ (R_o = 1 kΩ).

- What would be the total gain if you use 1 amplifier stage?

  A_{T1} = _____

- What would be the gain if you cascaded 2 amplifier stages between the source and the load?

  A_{T2} = _____

- Three stages?

  A_{T3} = _____

- n stages? (This answer should be an expression that involves n.)

  A_{Tn} = _____

- If you use a different type of amplifier which has R_i = 100 kΩ, R_o = 0.1 kΩ, and A = 5, how many stages would be required to have the output signal amplitude be at least 2.0 V (v_o > 2 V)?

  n = _____