

Special Problem II.B-25

Two amplifiers are connected as shown below.

The **signal to noise ratio** at the **input** of the first amplifier is 37.0 .

The **signal to noise ratio** at the **output** of the second amplifier is 8.0 .

The **same** bandwidth B was used to measure each SNR (SNR_{in} and SNR_{out})

The **manufacture** of the amplifier has stated that the **noise figure** of the first amplifier is $F_1=4.0$, the noise figure of the **second** is $F_2=5.0$, and the **gain** of the second amplifier is $G_2=10.0$.

Note that the **antenna temperature** is a relatively **low** value of $T_A = 260 \text{ K}^\circ$.

Note also that **none** of the values in this problem are expressed in **dB**.

Determine the gain G_1 of the first amplifier.

