Special Problem II.B-2

Consider the three elements below:

$T_A = 290$ K ▸ | Transmission Line $G= -10$ dB | ▷ $P = 8 \times 10^{-7}$ mW

$G = 30$ dB
$F = ???$
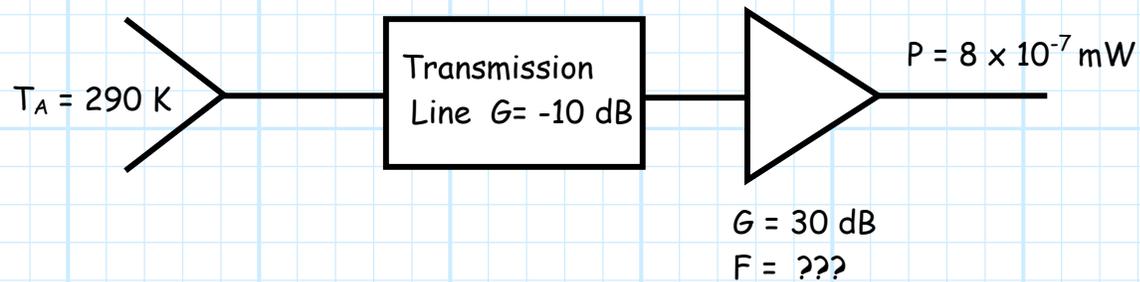
The antenna has a noise temperature of 290 degrees K.

The second element is a long length of transmission line that attenuates the signal 10 dB.

The amplifier has a gain of 30 dB but has an unknown noise figure.

The noise power at the amplifier output is 8.0×10^{-7} mW.

The amplifier bandwidth is 100 MHz.

Determine the noise figure of the amplifier.