Special Problem 4.E-2

A **properly designed** receiver has a **saturation** point of **+10 dBm**.

Its **total** dynamic range is **100 dB**.

The **detector** works properly up to a **maximum detector input** power of **–30 dBm**.

A signal at the **input of the receiver** has power of **+10 dBm**. The AGC **attenuator** is set to **75 dB**, resulting in a signal **into the detector** of **–30 dBm**.

A. Determine the power of the **smallest detectable signal** at the **receiver input**.

B. Determine the **total gain** of the receiver if the AGC **attenuator** is set to **zero**.

C. Determine the apparent **smallest** signal power **into the detector** that results in proper detector performance.

D. Determine the **instantaneous** dynamic range of the receiver.

E. Determine the **attenuation value** of the AGC attenuator if the signal power **into the receiver** drops to **–20 dBm**.