

**9.10** An antenna with a radiation efficiency of 90% has a directivity of 6.0 dB. What is its gain in decibels?

**Solution:**  $D = 6.0$  dB corresponds to  $D = 4.0$ .

$$G = \xi D = 0.9 \times 4.0 = 3.6 = 5.56 \text{ dB}.$$

Alternatively,

$$G \text{ (dB)} = \xi \text{ (dB)} + D \text{ (dB)} = 10 \log 0.9 + 6.0 = -0.44 + 6.0 = 5.56 \text{ dB}.$$

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