

**Concept Question 9-4:** Why is the corner frequency also called the half-power frequency?

**Corner frequency  $\omega_c$**

The corner frequency  $\omega_c$  is defined as the angular frequency at which  $M(\omega)$  is equal to  $1/\sqrt{2}$  of the *reference value*  $M_0$ .

$$M(\omega_c) = \frac{M_0}{\sqrt{2}} = 0.707M_0. \quad (9.5)$$

Since power is proportional to  $M^2$ , at the corner frequency the power is at 50% of its value at the frequency at which  $M_0$  is defined.