

53. Since the origin is midway between the coils, and the axis is chosen to be  $x$  (as opposed to the  $z$  used in Eq. 30-28), then the net field of the two coils is

$$B = \frac{\mu_0 N i R^2}{2} \left( \frac{1}{\sqrt{R^2 + (R/2 - x)^2}} + \frac{1}{\sqrt{R^2 + (R/2 + x)^2}} \right)$$

where  $i = 50$  A,  $N = 300$  and  $R = 0.050$  m. The graph of this function (using SI units) is shown below.

