

**Solution** (#1650) The complementary function of the homogeneous DE  $y'' + 3y' + 2y = 0$  is

$$y = Ae^{-x} + Be^{-2x}.$$

(i) A particular solution is

$$y = \frac{1}{2}x^2 - \frac{3}{2}x + \frac{7}{4}.$$

(ii) A particular solution is  $y = e^x/6$ .

(iii) A particular solution is

$$y = \frac{1}{10} \sin x - \frac{3}{10} \cos x.$$

(iv) A particular solution is  $y = xe^{-x}$ .