

**Solution** (#1594) The ODEs are all separable. (i)

$$\frac{y^2}{2} = \frac{x^3}{3} + k$$

where  $k$  is a constant.

(ii)

$$y + \frac{1}{4} \sin 4y = x + \frac{1}{2} \sin 2x + k$$

where  $k$  is a constant.

(iii)

$$-\frac{1}{2}e^{-2y} = e^x + k$$

where  $k$  is a constant.