

Solution (#1602) (i) We find

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

From the initial condition $y(\sqrt{2}) = 0$ we are not able to say whether $y = \frac{1}{\sqrt{2}}x\sqrt{x^2-2}$ or its negative.

(ii) We find

$$\cos y = \frac{1}{\sqrt{2}\sin x}.$$