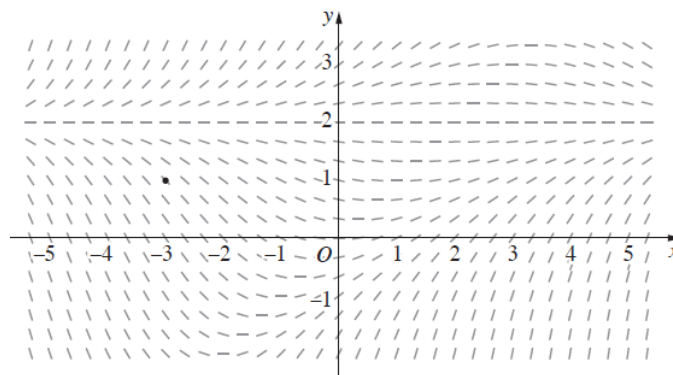**SP** **11** The trajectories of particles in a
MX **c**   fluid are described by the
1   differential equation
            $$\frac{dy}{dx} = \frac{1}{4}(y - 2)(y - x).$$
            The slope field for the differential
            equation is sketched.
            (i) Identify any solutions of
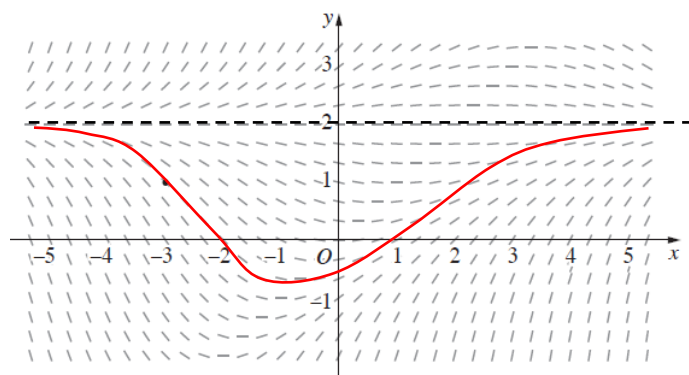   the form $y = k$, where
                 k is a constant.   **1**

(ii) Draw a sketch of the trajectory of a particle in the fluid which passes through the   **3**
     point $(-3, 1)$ and describe the trajectory as $x \to \pm\infty$.

(i) $\dfrac{dy}{dx} = 0$ when $y = 2$.

         Hence $k = 2$.

(ii)

         As $x \to \pm\infty$, the particle approaches $y = 2$ from below.