Constrained optimisation exercises

November 26, 2015

Solve by means of a program that implements a penalty method the following two optimization programs.

$$\min \ x\sin(x) + y\sin(y)$$

$$\text{s.t.} \begin{cases} x \geq \frac{1}{3} \\ y \geq \frac{3}{4} \\ x - \sin(y) \geq 0 \\ x^2 + y^2 \leq 5 \end{cases}$$

$$\min \ (x+1)^2 + \frac{1}{2}y^2$$

$$\text{s.t.} \begin{cases} x \leq 3 \\ y \geq 0 \\ \frac{1}{8}x^3 - y \geq 0 \end{cases}$$