

Consider the following constrained minimization problem.

Min $f = (x(1) - 1)^2 + (x(2) + 1)^2$ with respect to $x(1)$ and $x(2)$

subject to

$$g1 = x(2) - (-\frac{4}{3}x(1)^3 + 6x(1)^2 - 10.5x(1) + 7)$$

$$g2 = x(2) - 3x(1)$$

$$g3 = -x(1) - x(2) + 1.75$$

(i) Shade the feasible region;

(ii) Mark the optimum point P1 when all three constraints are considered;

(iii) Which constraints are active at P1? Tick (or not)

$g1$

$g2$

$g3$

(iv) Mark the optimum point P2 if only $g3$ is considered;

(v) Mark the optimum point P3 if $g1$ and $g2$ are considered but not $g3$.

