

scenario 3: first active, second slack

$$-\frac{1}{2}x^2 - y + 2 = 0$$

$$\lambda_1 > 0$$

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

$$y > 0$$

$$\lambda_2 = 0$$

$$C1: y - \lambda_1 x = 0$$

$$2 - \frac{1}{2}x^2 - \lambda_1 x = 0$$

$$-\lambda_1 x = -2 + \frac{1}{2}x^2 \quad / : x$$

$$\lambda_1 = \frac{2}{x} - \frac{x}{2}$$

$$C2: x + 2 - \lambda_1 + \lambda_2 = 0$$

$$x + 2 - \frac{2}{x} - \frac{x}{2} + 0 = 0$$

$$\frac{1}{2}x = \frac{2}{x} - 2 \quad / \cdot x$$

$$\frac{1}{2}x^2 + 2x - 2 = 0$$

\Downarrow

$$x = 2(\sqrt{2}-1) \text{ or } x = -2(1+\sqrt{2})$$

$$x = 0.82842712$$

$$y = 2 - \frac{1}{2}(0.828427)^2 = 1.5857865$$

1 var 1



scenario 4: both slack

$$-\frac{1}{2}x^2 - y + 2 > 0$$

$$\lambda_1 = 0$$

$$y > 0$$

$$\lambda_2 = 0$$

$$C1: y - \lambda_1 x = 0$$

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

$$y = 0$$

$$0 < 2 - \frac{1}{2}x^2$$

(solution on previous page)

$$x < 2 \wedge x < -2$$

$$C2: x + 2 - \lambda_1 + \lambda_2 = 0$$

$$0 \quad 0$$

$$x + 2 = 0$$

$$x = -2$$

$$x = \emptyset$$

Summary
Only one scenario had result. So the solution is $x = 0.82842712$
 $y = 1.5857865$