## Sans nom

FR-FR Exercices 1A En Optimisation



$$\frac{1}{1}$$
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(P) (=) 
$$\begin{cases} Min & ||\omega||^2 \\ < \omega, x > + b \ge 1 & \forall x \in \mathcal{I}' \\ < \omega, x > + b \le -1 & \forall x \notin \mathcal{I}^2 \end{cases}$$

$$\frac{||\omega|| \le ||\omega_0|| = |T|}{(\omega, b) \in \mathbb{R}^{n+1}} \quad \omega \quad born'$$

Soit 
$$x_i^* \in \mathcal{I}'$$
  $b > 1 - < \omega, x_i^* > > 1 - \Pi ||x_i^*||$   
Soit  $x_j^* \in \mathcal{I}'$   $b < -1 - < \omega, x_j^* > = -1 + \Pi \Pi ||1| ||x_j^*||$   
=) best bond.

$$\frac{1.2) \mathcal{L}(\omega,b,\mu',\mu^2)}{\mu' \in \mathbb{R}^{n_1}, \ \mu^2 \in \mathbb{R}^{n_2}} = \frac{\|\omega\|^2 - \sum_{i=1}^{n_1} (\langle \omega,z_i' > +b-1)}{\sum_{i=1}^{n_2} \mu_i^2 (\langle \omega,z_i' > +b+1)} + \sum_{i=1}^{n_2} \mu_i^2 (\langle \omega,z_i' > +b+1)$$







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Pages

FR-FR Exercices 1A En Optimisation



(P) (=) 
$$Min ||w||^2$$
  
 $<\omega,x>+b>1 \forall x \in \empty^2$   
 $<\omega,x>+b=-1 \forall x \in \empty^2$   
 $||w|| = ||w_0|| = |\empty| \quad \text{w} \text{born'} \quad \text{(w,b)} \in \mathbb{P}^{n+1}$ 

Soit 
$$x_i^T \in \mathcal{I}'$$
  $b > 1 - \langle \omega, x_i^T \rangle > 1 - \Pi \|x_i^T\|$   
Soit  $x_j^T \in \mathcal{I}'$   $b < -1 - \langle \omega, x_j^T \rangle \leq -1 + \|\Pi\|\|x_j^T\|$   
=)  $b \in \mathcal{A}$  bond.

$$\frac{1.2) \mathcal{L}(\omega, b, \mu', \mu^2)}{\mu' \in \mathbb{R}^{n_1}, \ \mu^2 \in \mathbb{R}^{n_2}} = \frac{\|\omega\|^2 - \sum_{i=1}^{n_1} |(<\omega, z_i' > + b - 1)}{+ \sum_{i=1}^{n_2} \mu^2_i (<\omega, z_i' > + b + 1)}$$

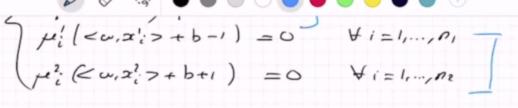
$$<\omega,x>+b>,1$$
  $\forall x\in T'$   $\begin{cases} <\omega,x|>+b-1>>0 \end{cases}$   $<\omega',x|,>+b-1>>0 \end{cases}$ 

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## < Pages

Sans nom

FR-FR Exercices 1A En Optimisation



1.4) 
$$\mathcal{L}(\omega,b,\mu) = ||\omega||^2 + \langle \mu, DX\omega + bDe + e \rangle$$
 (en(w,b)

$$\{v,b\}$$
  $\mathcal{L}(\omega,b,\mu) = \left(2\omega + (DX)^T\mu\right) = 0 \iff Min \mathcal{L}(v,b,\mu)$ 
 $<\mu,De>$ 







## Sans nom

FR-FR Exercices 1A En Optimisation



1.4) \$ (w, b, \mu) = ||w||2 + (m) DX (w+bDe+e>

DATH, -DXT-12>  $(D_{1}^{N}\Gamma_{1}^{1}-V_{1}^{N}\Gamma_{2}^{N})\mathcal{L}(\omega,b,\mu)=\left(2\omega+(D_{1}^{N})\Gamma_{\mu}\right)=0 \iff Min\mathcal{L}(\omega,b,\mu)$ 

4(4)= Mir Dw,b,4) = -1/1/0x) 1/1/2+ 6< De > 4/10x) 9: <p, De> #0 , f(w,b,p) = llwll +<p, Dxw>++ b+ bDe>

$$\frac{D}{D} \int M_{0x} \psi(\mu) = -\frac{1}{4} ||Dx|^{T} \mu||^{2} + <\mu, e>$$

$$\frac{De}{\mu \neq 0} = 0$$









