

6.9 Minimax rational function fitting

✓ Domain $D \subseteq \mathbb{R}$ convex.

→ q is both affine, $\alpha \leq t \leq \beta$ is $\frac{p(t)}{q(t)}$ half-space.

✓ Sublevel set $f(a, b) \leq \gamma$ is convex

$$\rightarrow \max_{i=1 \dots k} \left| \frac{p(t_i)}{q(t_i)} - y_i \right| \leq \gamma$$

$$\Leftrightarrow |p(t_i) - y_i q(t_i)| \leq \gamma q(t_i)$$

$$\Leftrightarrow -\gamma q(t_i) \leq p(t_i) - y_i q(t_i) \leq \gamma q(t_i)$$

→ affine → convex

then, f is quasi-convex

