Star-convex w.r.t. $\mathbf{p}$ (blue segments), but not convex (red segment).

Labels in figure:
$\mathbf{x}_3$
$\mathbf{x}_1$
$\mathbf{a}$
removed slit
$\mathbf{p} = (-\frac{3}{2}, 0)$
$\mathbf{b}$
$\mathbf{x}_2$