

A CONJUGATE DIRECTIONS METHOD OF WOLFE (1975)

$$f(x, y) = \begin{cases} 5(9x^2 + 16y^2)^{\frac{1}{2}}, & x > |y| \\ 9x + 16|y|, & x \leq |y| \end{cases}$$

- BEHAVIOUR of STEEPEST DESCENT with EXACT LINE SEARCH:
COLLAPSE at $(0, 0)$: NO INFORMATION ABOUT $\partial f(0,0)$
- EVALUATE $\partial f(0,0)$ AS THE CONVEX HULL OF THE GRADIENTS IN THE NEIGHBORHOOD OF $(0,0)$.

Demjanov (1968): $\nabla f(x) = d$, $\|d\|_2 = \text{Min} \{ \|u\|_2; u \in \text{cl HULL}\{\partial f(x)\} \}$

