Problem set 2: Simplex method

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1 Exercise 1

We aim to find the minimum of the Rosenbrock $\mathscr{R} : \mathbb{R}^2 \to \mathbb{R}$ defined as

$$\mathscr{R}(x, y) = (1 - x)^2 + 10(y - x^2)^2 \tag{1}$$

We use the simplex method to do it, as per presented in the slides of Lecture 1. Starting at the points $z_1 = (1; 2), z_2 = (0.5; 0.8), z_3 = (2.3; 8)$ and using the algorithm presented in the previous section, we obtain the minimum $z^* = (1, 1)$ in 62 iterations. Alternatively, using the starting points $z_1 = (1; 1), z_2 = (2; 2), z_3 = (3; 3)$ leads to a minimum $z^* = (1, 1)$ in 28 iterations as well.