procedure SGA($f : \mathbb{X} \mapsto \mathbb{R}^+$, ps, cr) ▷ **for maximization!**

$x_B \leftarrow \emptyset$; $y_B \leftarrow -\infty$; ▷ best-so-far solution

for $j \in 1 \ldots ps$ **do** ▷ random initial population

randomly sample $S_0[j].x$ from $\mathbb{X}$; $S_0[j].y \leftarrow f(S_0[j].x)$;

if $S_0[j].y > y_B$ **then** $x_B \leftarrow S_0[j].x$; $y_B \leftarrow S_0[j].y$;

for $i \in 0 \ldots \infty$ **do** ▷ iterate "generations"

for $j \in 1 \ldots ps$ **do** ▷ new pop. via mutation and crossover

if $\mathfrak{R}_0^1 < cr$ **then** $N_i[j].x \leftarrow \texttt{binary}(S_i[\lfloor \mathfrak{R}_1^{ps} \rfloor].x, S_i[\lfloor \mathfrak{R}_1^{ps} \rfloor].x)$;

else $N_i[j].x \leftarrow \texttt{move}(S_i[\lfloor \mathfrak{R}_1^{ps} \rfloor].x)$;

$N_i[j].y \leftarrow f(N_i[j].x)$;

$S_{i+1} \leftarrow$ *Roulette Wheel:* select ps records from $P_i = S_i \cup N_i$ such that, for each of the ps slots, the probability of $P_i[j]$ to be chosen is **proportional to $P_i[j].y$.**