Tecnológico de Monterrey

Computational intelligence

Homework 4

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Problems

1. Tournament selection

	Population	f
A	010111000	-1
B	011101001	4
C	111000110	-2
D	100001000	1
E	010101000	-1

- How many copies of each chromosome are present in the mating pool?
  - A: 0
  - B: 3
  - C: 0
  - D: 2
  - E: 0
- What is the average fitness of the chromosomes in the mating pool?

  2.8
- If the tournament size is reduced to one, what is the probability that the chromosome 100001000 appears in the mating pool?

  100%
- If the tournament size is increased to five, and both crossover and mutation rate are set to zero, what is the probability that the chromosome 010111000 survives to the next population?

  0%

2. Whole arithmetic crossover

$$x = \{0.18, 0.75, 0.92, 0.26, 0.44\}$$
$$y = \{0.36, 0.77, 0.62, 0.13, 0.51\}$$

$$c^1_{.5} = \{0.27, .76, .77, .195, .475\} \qquad c^2_{.5} = \{0.27, .76, .77, .195, .475\}$$
$$c^1_{.1} = \{0.342, 0.768, 0.65, 0.143, 0.503\} \qquad c^2_{.1} = \{0.198, 0.752, 0.89, 0.247, 0.447\}$$

3. Exponential ranking selection

	Population	f
A	6661166703	5
B	3306772232	5
C	0489794549	4
D	2660088784	4
E	3578647359	3

4. Schemata
5. Practical case
6. Analysis