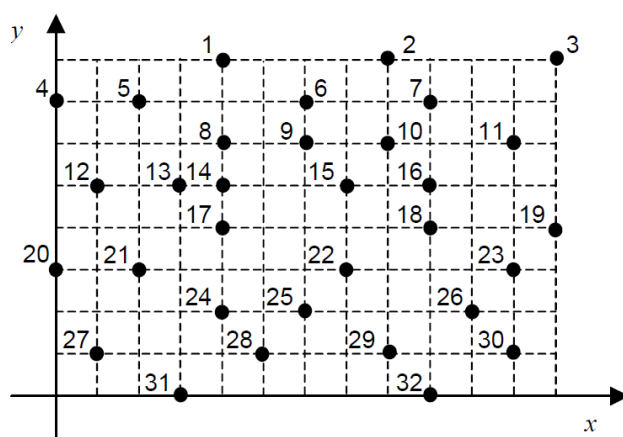


## Lista de Exercícios - Colônia de Formigas

*Implemente o algoritmo de colônia de formigas para resolver o problema do caixeiro viajante descrito a seguir:*



**Figure 3.28:** Simple TSP with 32 cities. The cities are placed on a regular grid on the  $x$ - $y$  plane, in which each point (●) represents a city, the number next to each city corresponds to its index, and each square on the grid corresponds to one unit of distance (uod - e.g., Km).

Cidade	X	Y
1	4	8
2	8	8
3	12	8
4	0	7
5	2	7
6	6	7
7	9	7
8	4	6
9	6	6
10	8	6
11	11	6
12	1	5
13	3	5
14	4	5
15	7	5
16	9	5
17	4	4
18	9	4
19	12	4
20	0	3
21	2	3
22	7	3
23	11	3

24	4	2
25	6	2
26	10	2
27	1	1
28	5	1
29	8	1
30	11	1
31	3	0
32	9	0