

These questions relate to lecture material and aim to highlight the most important concepts. We will cover questions similar to these for our final.

1. Suppose we have a character following a path. The character's current position is  $(0.9, 0, 1)$ . We want the character to travel to the waypoint at  $(10, 0, 0)$ . Write pseudocode that moves the character towards the waypoint using a seek behavior

2. Write pseudocode to find the closest point on a spline by treating it as a piecewise linear curve.

3. Suppose we wish to do pathfinding on a regular grid. Suppose each cell in the grid has width and height equal to 0.1. Suppose the grid's lower left corner is at position  $(0, 0)$  and its upper right corner is at position  $(10, 10)$ . Please write code to compute
  - 4a. How many rows and columns are there?
  - 4b. What cell is the position  $(x, y)$  in?
  - 4c. What is the center point of cell  $(i, j)$ ?
  - 4d. List the neighbors of cell  $(i, j)$

4. Suppose we have the navigation mesh below where the gray shape represents an obstacle. How can we use a graph search algorithm to find a collision-free path between two points?

