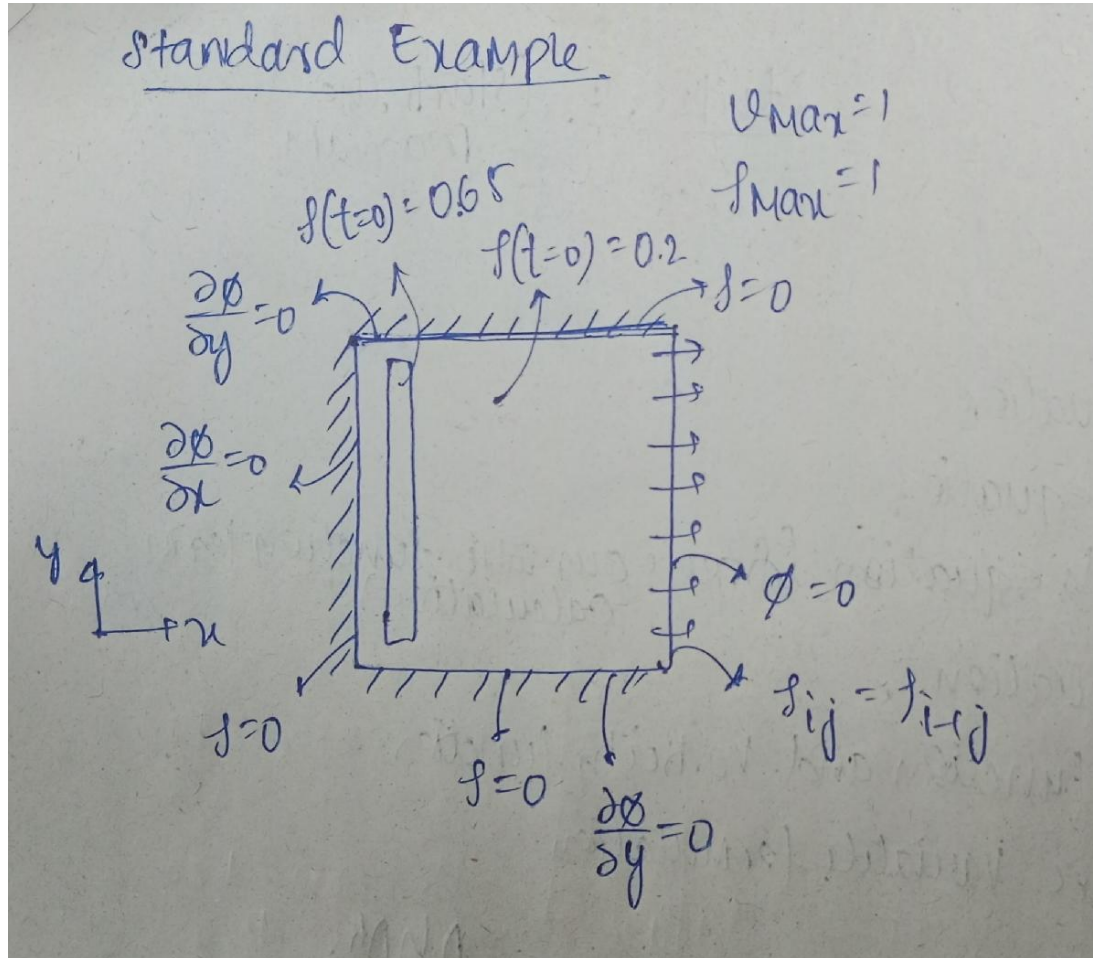# Hughe's Flow in 2D (Meeting 5)

So I have tried solvign the following problems.
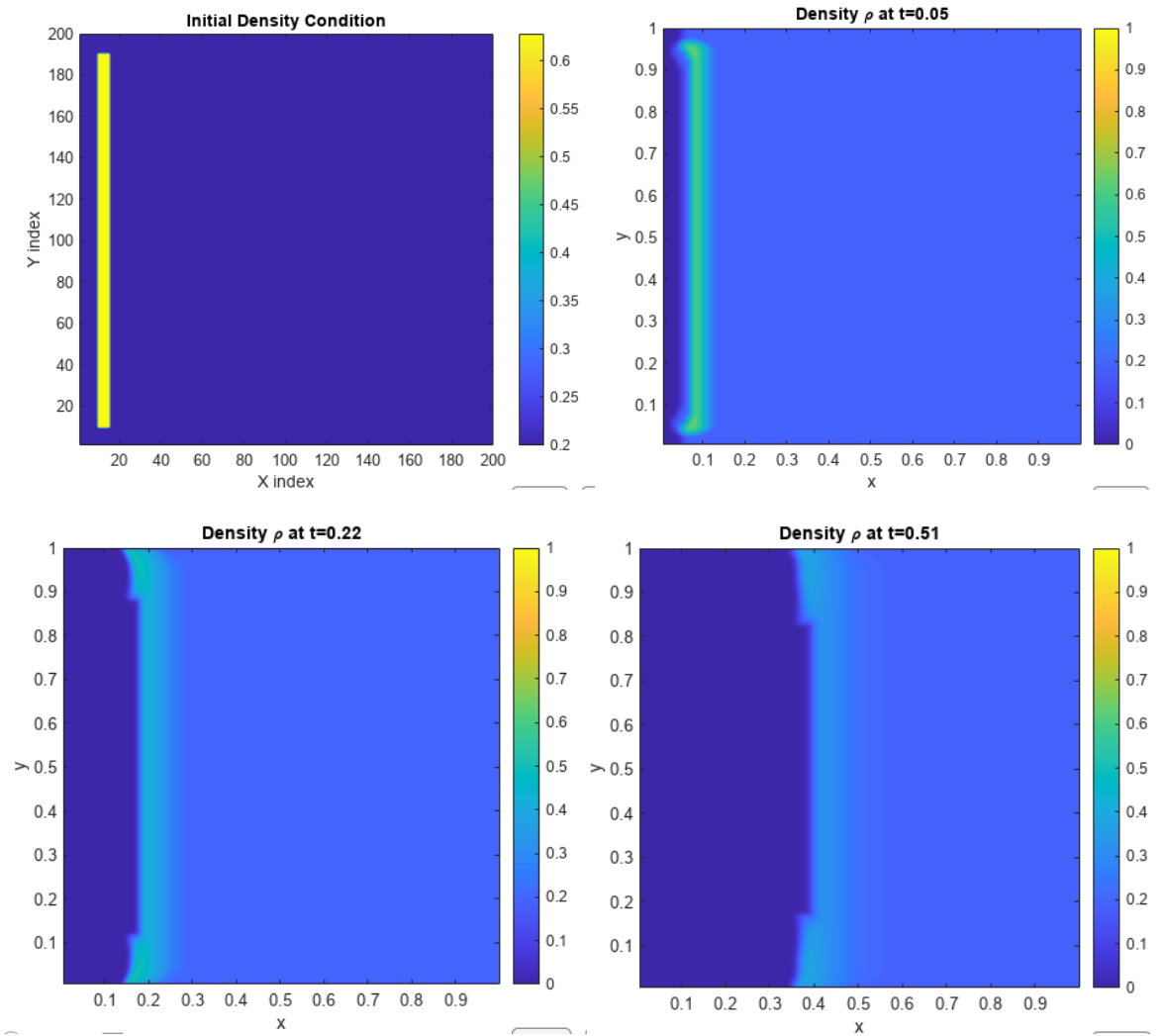
1. Problem 1 (Standard Problem)
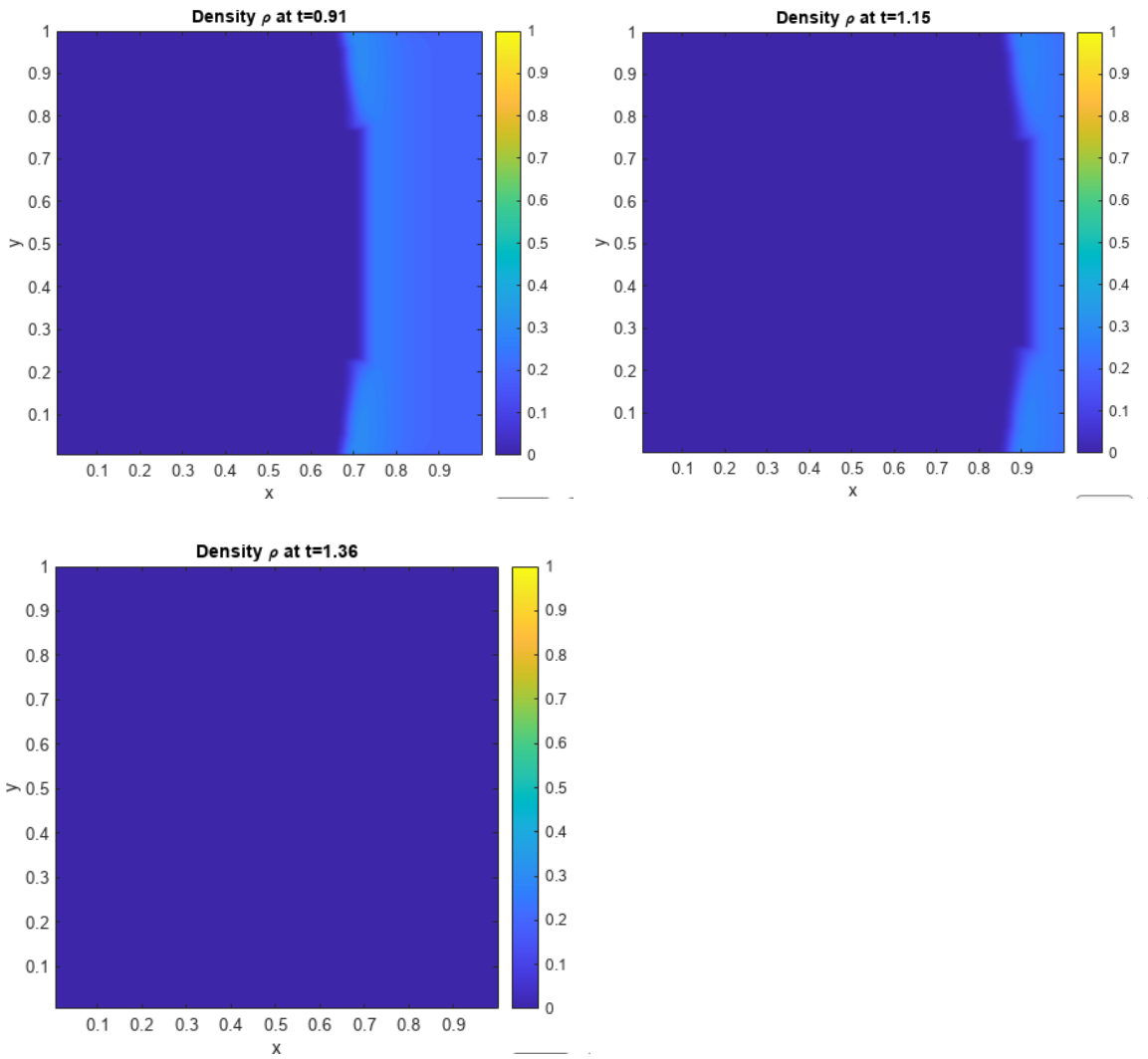
This is just a toy problem to test the 2D hughe's flow.

Domain

Result

Initial Density Condition

Density ρ at t=0.05

Density ρ at t=0.22

Density ρ at t=0.51

2

Density ρ at t=0.91

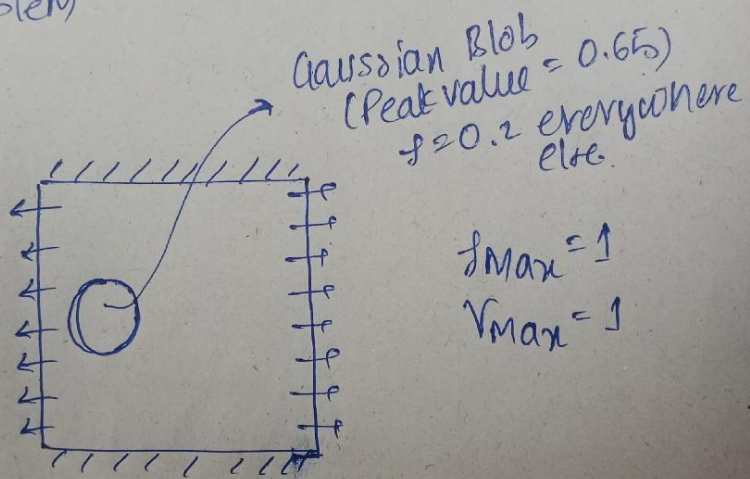Density ρ at t=1.15

Density ρ at t=1.36

Problem 2 (Multi Exit Problem)

Here I wanted to test if the crowd will be able to pick the nearest exit which is to the left.

Domain

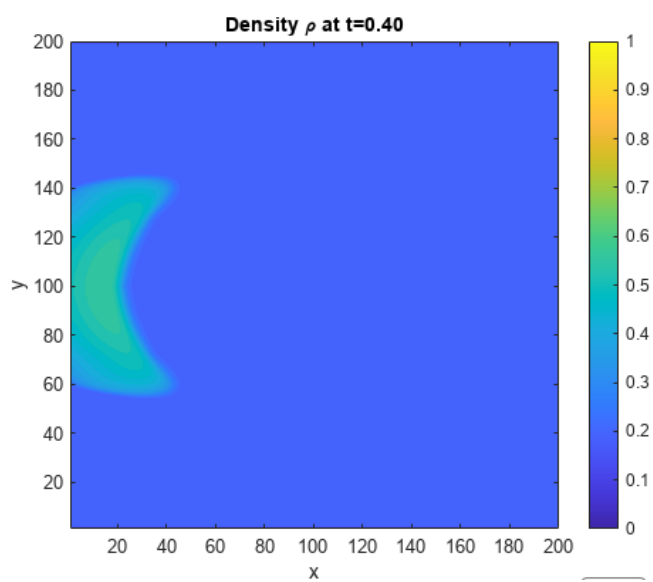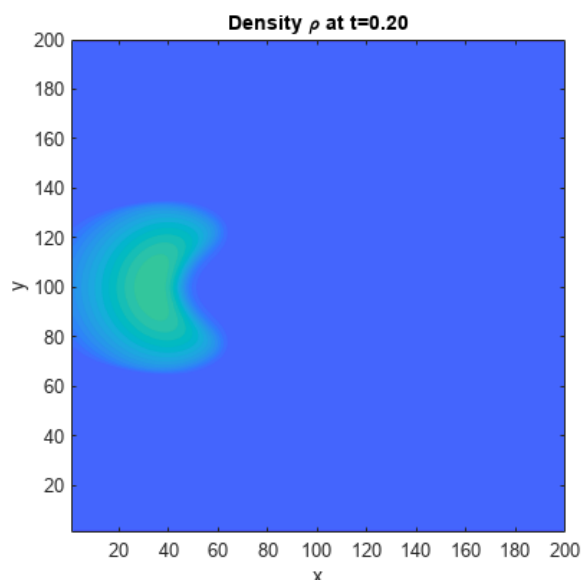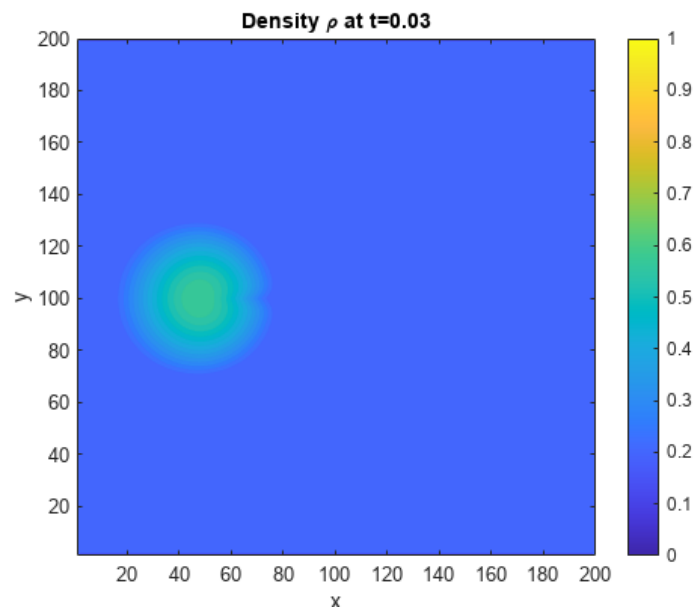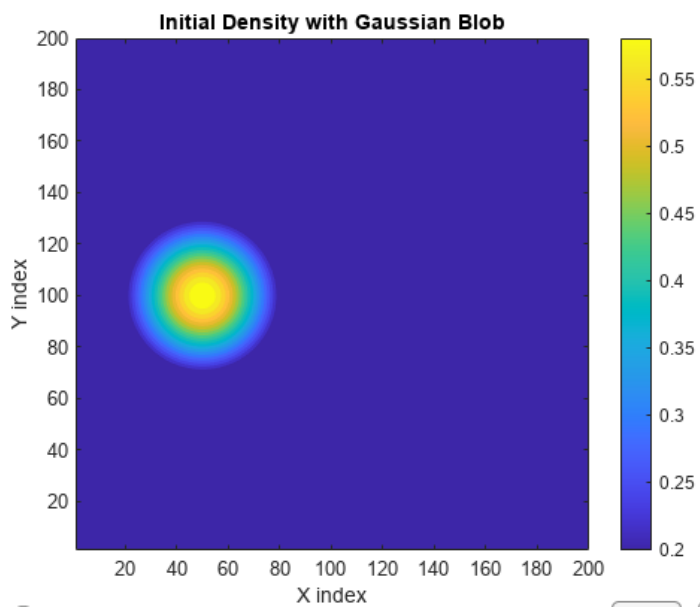# Multi Exit Problem

Gaussian Blob
(Peak value = 0.65)
$f = 0.2$ everywhere else.

$f_{Max} = 1$
$V_{Max} = 1$

Result

Initial Density with Gaussian Blob

Density ρ at t=0.03

Density ρ at t=0.20

Density ρ at t=0.40

Density ρ at t=0.54

Density ρ at t=0.65

Density ρ at t=0.77
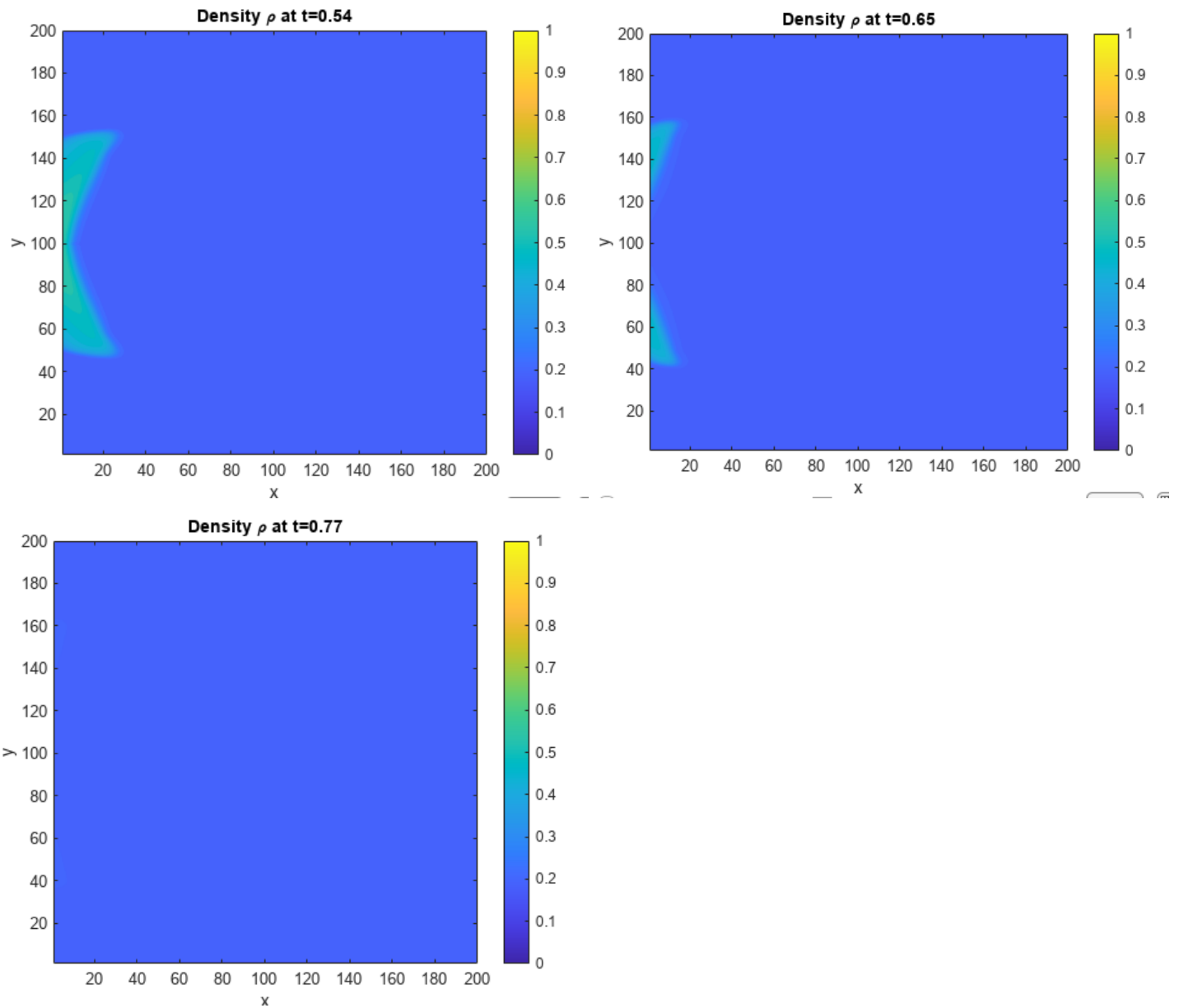
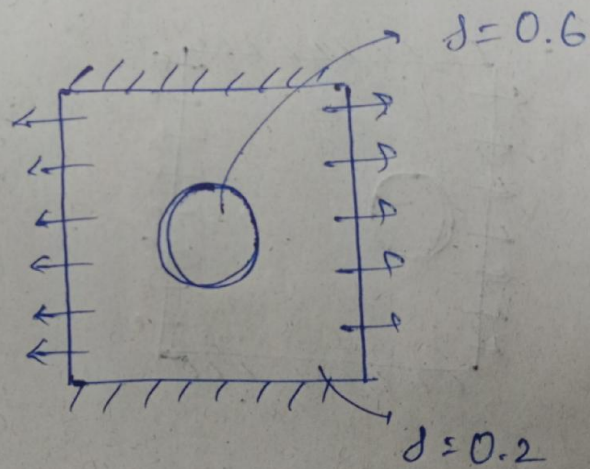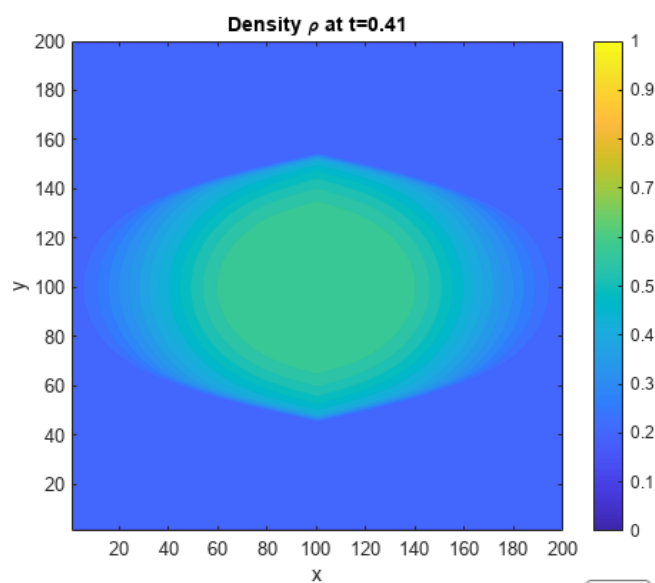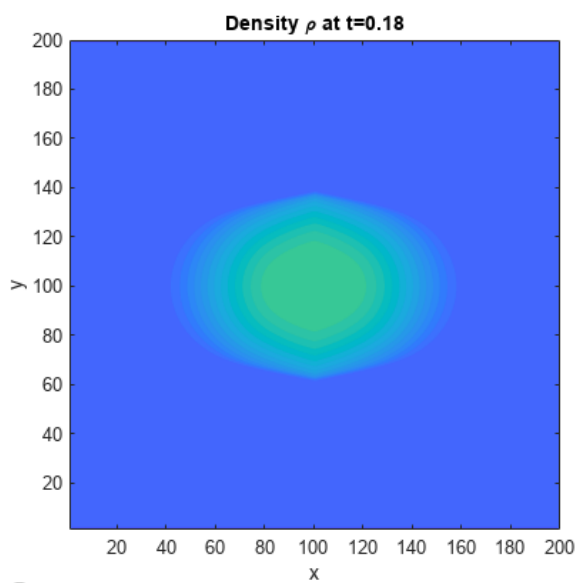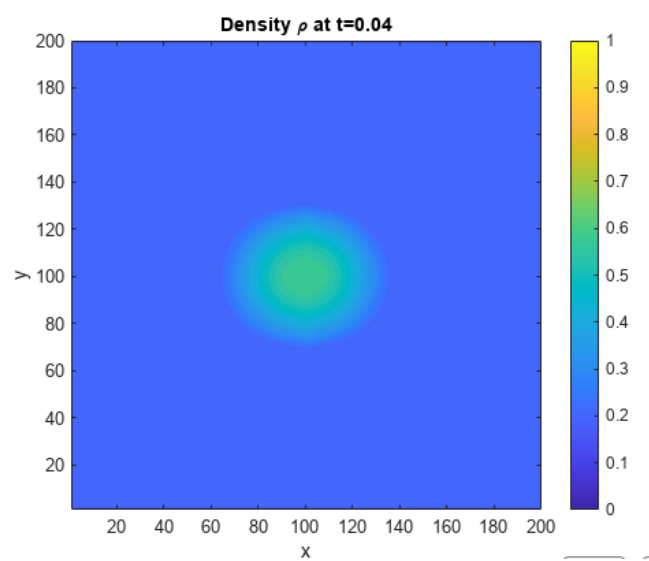# Problem 3 (Multi Exit Problem)

Here I was interested to know where does the crowd move, if both the exit is equi-distance from it.

Domain

Multi Exit Problem

$\delta = 0.6$

$\delta = 0.2$

Results

Initial Density with Gaussian Blob

Density ρ at t=0.04

Density ρ at t=0.18

Density ρ at t=0.41

Density ρ at t=0.79

Density ρ at t=1.02
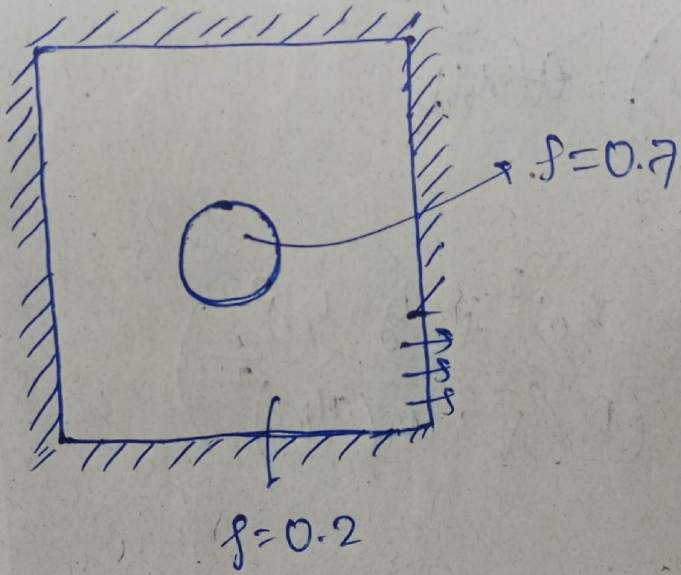
Density ρ at t=1.20

Density ρ at t=1.50
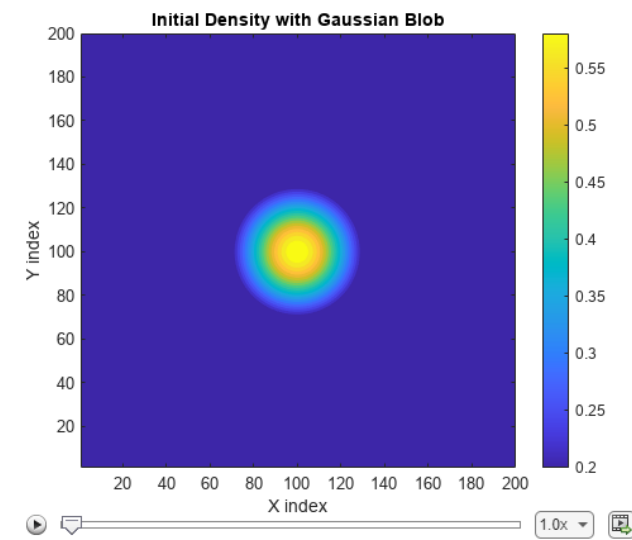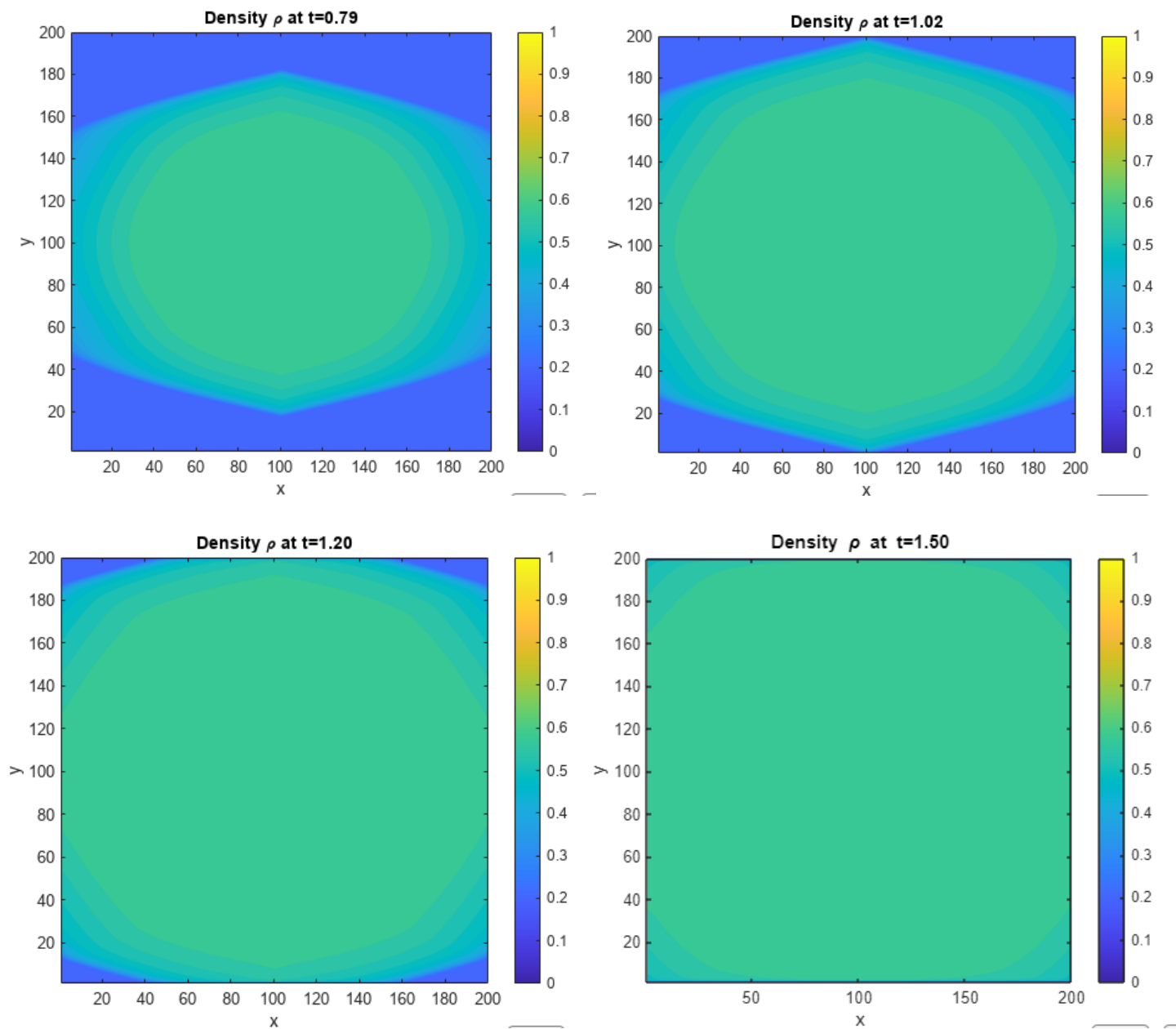
Problem 4 (Unsymmetric Exit)

Domain

9

unsymmetric Exit

$\int = 0.7$

$\int = 0.2$

Results

Initial Density with Gaussian Blob

Density ρ at t=0.02

Density ρ at t=0.12

Density ρ at t=0.27

Density ρ at t=0.45

Density ρ at t=0.63

11

Density ρ at t=0.84

Density ρ at t=1.04

Density ρ at t=1.11

Density ρ at t=1.24

Density ρ at t=1.48