# Problem 1

## HDE (old)

|  |
| --- |
| epsilon = 1e-6;  delta = 0.01;  pop\_size = 250;  max\_gen = 250;  dim = 2;  mutation\_factor=0.8;  crossover\_rate=0.1;  seed = 'shuffle';  print\_stat = false;  verbose = true;  visual\_properties = struct('show\_visual',true, ...  'save\_visual', false, ...  'file\_name', 'hde.avi');  % how many parts/slices do you desire in each dimension?  parts = 100;  % Define boundaries  boundaries = repmat([-10, 10], dim, 1); |

A screenshot of a computer

Description automatically generatedA white rectangular object with a black border

Description automatically generated

## HDE (new)

|  |
| --- |
| epsilon = 1e-6;  delta = 0.01;  pop\_size = 250;  max\_gen = 250;  dim = 2;  mutation\_factor=0.8;  crossover\_rate=0.1;  seed = 'shuffle';  print\_stat = false;  verbose = true;  visual\_properties = struct('show\_visual',false, ...  'save\_visual', false, ...  'file\_name', 'hde.avi');  % how many parts/slices do you desire in each dimension?  parts = 100;  % Define boundaries  boundaries = repmat([-10, 10], dim, 1); |

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## RADE (old)

|  |
| --- |
| pop\_size=250;  max\_gen=250;  F\_init=0.5;  CR\_init=0.5;  num\_l=10;  theta=1e-6;  tau\_d=0.4;  s\_max=20;  print\_gen=false;  Hm = 50;  dim = 2;  seed = 'shuffle';  beta = 1;  rho = tau\_d; |

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## RADE (new)

|  |
| --- |
| pop\_size=250;  max\_gen=250;  F\_init=0.5;  CR\_init=0.5;  num\_l=10;  theta=1e-6;  tau\_d=0.4;  s\_max=20;  print\_gen=false;  Hm = 50;  dim = 2;  seed = 'shuffle';  beta = 1;  rho = tau\_d; |

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## SDDE (old)

|  |
| --- |
| dim = 2;  mutation\_factor=0.8;  crossover\_rate=0.1;  tau\_d=0.4;  m\_cluster = 250;  gamma = -0.2;  epsilon = 1e-6;  delta = 0.01;  k\_cluster = 10;  m = 250;  k\_max = 250;  seed = 'shuffle';  verbose = false;  print\_stat = false;  visual\_properties = struct('show\_visual',false, ...  'save\_visual', false, ...  'file\_name', 'sdde.avi');  % Define boundaries  boundaries = repmat([-10, 10], dim, 1); |

A screenshot of a computer

Description automatically generatedA computer screen shot of a computer

Description automatically generated

## SDDE (new)

|  |
| --- |
| dim = 2;  mutation\_factor=0.8;  crossover\_rate=0.1;  tau\_d=0.4;  m\_cluster = 250;  gamma = -0.2;  epsilon = 1e-6;  delta = 0.01;  k\_cluster = 10;  m = 250;  k\_max = 250;  seed = 'shuffle';  verbose = false;  print\_stat = false;  visual\_properties = struct('show\_visual',false, ...  'save\_visual', false, ...  'file\_name', 'sdde.avi');  % Define boundaries  boundaries = repmat([-10, 10], dim, 1); |

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