In[1]:=
```
μ[λ_, ρ_] := λ/(2 ρ)
μ[0.25, {0.55}]
Clear["Global`*"] (*Clear all global Variables*)
```

Out[2]=
```
{0.227273}
```

Define Theoretical Equations

In[4]:=
```
Clear[λ, μ]
P0[ρ_] := (1 - ρ)/(1 - ρ^11) (*Stationary Distribution*)
P[ρ_, n_] := P0[ρ] * ρ^n (*Prob of being in state n*)
PBlock[ρ_] := P[ρ, 10] (*Blocking Probability*)
L[ρ_] := Sum[n * P[ρ, n], {n, 0, 10}] (*AVG num of Customers*)
B[ρ_] := 1 - P0[ρ] (*AVG num of Cust being Served*)
Lq[ρ_] := (L[ρ] - B[ρ] ) (*Avergae Que Length*)
S[ρ_, λ_] := L[ρ]/λ (*AVG sojourn time*)
S2[ρ_, μ_] := 1/(2 μ) * (1 - 11 ρ^10 + 10 ρ^11)/((1 - ρ) (1 - ρ^11)) (*AVG sojourn time in terms of μ*)
```

Define Plots

In[13]:=
```
TheorPlot[title_, f_, domain_, range_, xLabel_, yLabel_] := Plot[f, domain,
  PlotRange → range,
  AxesLabel → {xLabel, yLabel},
  PlotLabel → title,
  PlotStyle → Black, PlotLegends → {"Theoretical"}
 ]
S1Plot[x_, y_] := ListPlot[
  Transpose[{x, y}],
  PlotStyle → Red, PlotLegends → {"Strategy 1"}
 ]
S2Plot[x_, y_] := ListPlot[
  Transpose[{x, y}],
  PlotStyle → Blue, PlotLegends → {"Strategy 2"}
 ]
```

Blocking Probability

λ Plot (Set μ = 0.5) (λ → {0,1})

In[16]:=
```
x = {0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0};
S1y = ConstantArray[0, 11];
S2y = ConstantArray[0, 11];
```

Strategy 1 Data

In[19]:=
```
S1y[[1]] = Mean[{0}]; (*λ=0*)
S1y[[2]] = Mean[{0}];(*λ=0.1*)
S1y[[3]] = Mean[{0}];(*λ=0.2*)
S1y[[4]] = Mean[{0}];(*λ=0.3*)
S1y[[5]] = Mean[{0.00020000, 0.00080000, 0.00010000, 0.00070000, 0.00040000,
    0.00010000, 0.00010000, 0.00030000, 0.00030000, 0.00030000}];(*λ=0.4*)
S1y[[6]] = Mean[{0.00040000, 0.00080000, 0.00060000, 0.00130000, 0.00050000,
    0.00050000, 0.00040000, 0.00110000, 0.00060000, 0.00020000}]; (*λ=0.5*)
S1y[[7]] = Mean[{0.00290000, 0.00280000, 0.00270000, 0.00070000, 0.00150000,
    0.00170000, 0.00320000, 0.00210000, 0.00210000, 0.00330000}]; (*λ=0.6*)
S1y[[8]] = Mean[{0.00570000, 0.01010000, 0.00620000, 0.00840000, 0.01080000,
    0.00860000, 0.00470000, 0.00860000, 0.01050000, 0.00610000}]; (*λ=0.7*)
S1y[[9]] = Mean[{0.02390000, 0.02260000, 0.02280000, 0.02410000, 0.02550000,
    0.02280000, 0.02290000, 0.02660000, 0.02300000, 0.02060000}]; (*λ=0.8*)
S1y[[10]] = Mean[{0.04710000, 0.05100000, 0.06320000, 0.04000000, 0.04990000,
    0.04160000, 0.05090000, 0.05300000, 0.05440000, 0.05520000}]; (*λ=0.9*)
S1y[[11]] = Mean[{0.09290000, 0.07630000, 0.08790000, 0.08740000, 0.07350000,
    0.09100000, 0.09790000, 0.09500000, 0.09050000, 0.08940000}];(*λ=1.0*)
```

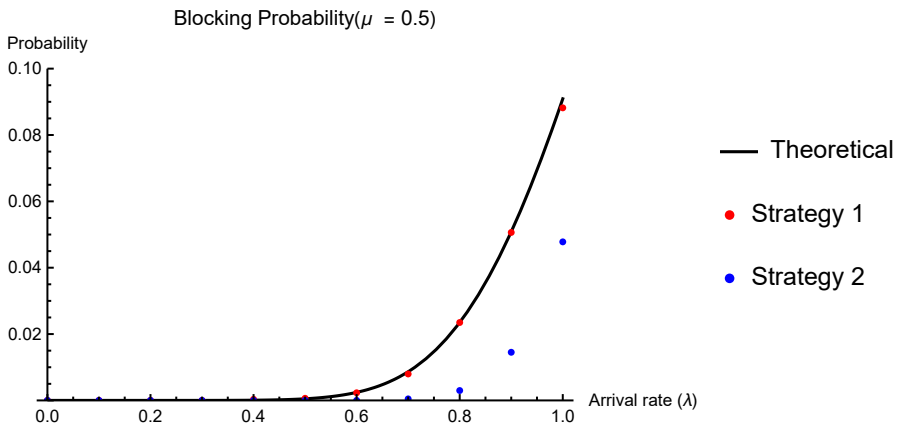
Strategy 2 Data

In[30]:=
```
S2y[[2]] = Mean[{0.00000000, 0.00000000, 0.00000000, 0.00000000, 0.00000000,
    0.00000000, 0.00000000, 0.00000000, 0.00000000, 0.00000000}]; (*λ=0.10*)
S2y[[3]] = Mean[{0.00000000, 0.00000000, 0.00000000, 0.00000000, 0.00000000,
    0.00000000, 0.00000000, 0.00000000, 0.00000000, 0.00000000}]; (*λ=0.20*)
S2y[[4]] = Mean[{0.00000000, 0.00000000, 0.00000000, 0.00000000, 0.00000000,
    0.00000000, 0.00000000, 0.00000000, 0.00000000, 0.00000000}]; (*λ=0.30*)
S2y[[5]] = Mean[{0.00000000, 0.00000000, 0.00000000, 0.00000000, 0.00000000,
    0.00000000, 0.00000000, 0.00000000, 0.00000000, 0.00000000}]; (*λ=0.40*)
S2y[[6]] = Mean[{0.00000000, 0.00000000, 0.00000000, 0.00000000, 0.00000000,
    0.00000000, 0.00000000, 0.00000000, 0.00000000, 0.00000000}]; (*λ=0.50*)
S2y[[7]] = Mean[{0.00000000, 0.00000000, 0.00000000, 0.00000000, 0.00000000,
    0.00000000, 0.00000000, 0.00000000, 0.00000000, 0.00000000}]; (*λ=0.60*)
S2y[[8]] = Mean[{0.00000000, 0.00000000, 0.00000000, 0.00040000, 0.00200000,
    0.00000000, 0.00060000, 0.00090000, 0.00060000, 0.00010000}]; (*λ=0.70*)
S2y[[9]] = Mean[{0.00230000, 0.00290000, 0.00070000, 0.00620000, 0.00130000,
    0.00500000, 0.00240000, 0.00180000, 0.00350000, 0.00370000}]; (*λ=0.80*)
S2y[[10]] = Mean[{0.01430000, 0.01600000, 0.01000000, 0.01140000, 0.01450000,
    0.01620000, 0.01230000, 0.01530000, 0.01650000, 0.01860000}]; (*λ=0.90*)
S2y[[11]] = Mean[{0.04160000, 0.04540000, 0.03900000, 0.04110000, 0.05670000,
    0.05390000, 0.05540000, 0.05790000, 0.04950000, 0.03740000}]; (*λ=1.00*)
```

Plot

In[40]:=
```
p1 = TheorPlot["Blocking Probability(μ = 0.5)",
    PBlock[λ/(2 (0.5))], {λ, 0, 1}, {0, 0.1}, "Arrival rate (λ)", "Probability"];
Show[p1, S1Plot[x, S1y], S2Plot[x, S2y]]
```

Out[41]=



μ Plot (Set $\lambda = 10$) ($\mu \to \{0.5,6\}$)

In[42]:=
```
x = {0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 6};
S1y = ConstantArray[0, 11];
S2y = ConstantArray[0, 11];
```

Strategy 1 Data

In[45]:=
```
S1y[[1]] = Mean[{0.90330000, 0.90200000, 0.89730000, 0.89910000, 0.89550000,
    0.89820000, 0.89990000, 0.89640000, 0.89620000, 0.89750000}]; (*μ=0.50*)
S1y[[2]] = Mean[{0.80580000, 0.80080000, 0.80190000, 0.80010000, 0.80070000,
    0.80870000, 0.79440000, 0.79050000, 0.78830000, 0.79790000}]; (*μ=1.00*)
S1y[[3]] = Mean[{0.69400000, 0.69550000, 0.69580000, 0.69360000, 0.69200000,
    0.70470000, 0.70510000, 0.69670000, 0.70800000, 0.70220000}]; (*μ=1.50*)
S1y[[4]] = Mean[{0.60680000, 0.59170000, 0.61240000, 0.59670000, 0.60060000,
    0.59700000, 0.58380000, 0.60910000, 0.59160000, 0.60020000}]; (*μ=2.00*)
S1y[[5]] = Mean[{0.50860000, 0.48790000, 0.50610000, 0.49550000, 0.50470000,
    0.50210000, 0.49460000, 0.49760000, 0.50210000, 0.50400000}]; (*μ=2.50*)
S1y[[6]] = Mean[{0.40310000, 0.40290000, 0.40000000, 0.41110000, 0.41850000,
    0.39860000, 0.38800000, 0.41550000, 0.39420000, 0.40980000}]; (*μ=3.00*)
S1y[[7]] = Mean[{0.30740000, 0.28270000, 0.29560000, 0.30150000, 0.30840000,
    0.31150000, 0.29290000, 0.32740000, 0.29490000, 0.32890000}]; (*μ=3.50*)
S1y[[8]] = Mean[{0.21330000, 0.20230000, 0.21920000, 0.21330000, 0.21640000,
    0.23030000, 0.22590000, 0.21420000, 0.20640000, 0.22570000}]; (*μ=4.00*)
S1y[[9]] = Mean[{0.13870000, 0.12980000, 0.14120000, 0.13180000, 0.12760000,
    0.13220000, 0.13780000, 0.14860000, 0.16200000, 0.14720000}]; (*μ=4.50*)
S1y[[10]] = Mean[{0.08190000, 0.09200000, 0.09950000, 0.10660000, 0.09290000,
    0.10080000, 0.07570000, 0.09560000, 0.07550000, 0.07880000}]; (*μ=5.00*)
S1y[[11]] = Mean[{0.03270000, 0.03810000, 0.02960000, 0.03180000, 0.02840000,
    0.03310000, 0.03110000, 0.02430000, 0.03530000, 0.02970000}]; (*μ=6.00*)
```

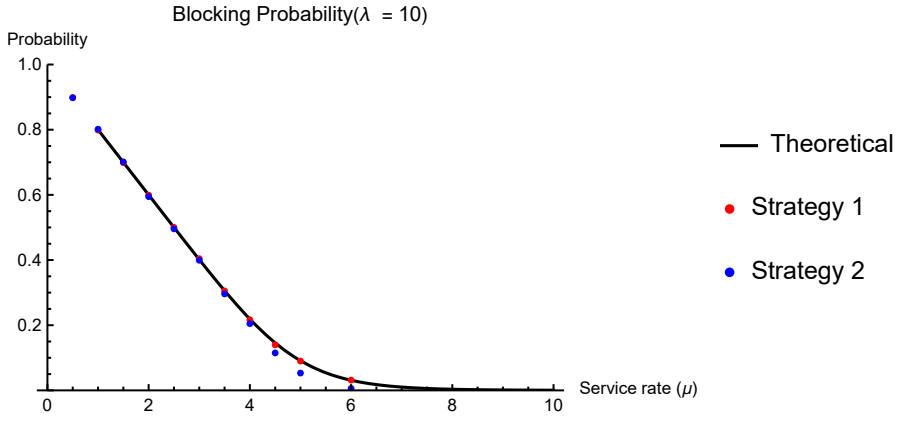
Strategy 2 Data

In[56]:=
```
S2y[[1]] = Mean[{0.90360000, 0.89720000, 0.89970000, 0.89720000, 0.89760000,
    0.89520000, 0.89650000, 0.89840000, 0.89910000, 0.89610000}]; (*μ=0.50*)
S2y[[2]] = Mean[{0.81070000, 0.79540000, 0.79850000, 0.79900000, 0.79970000,
    0.80590000, 0.80410000, 0.80230000, 0.80560000, 0.79450000}]; (*μ=1.00*)
S2y[[3]] = Mean[{0.70770000, 0.70340000, 0.70220000, 0.69820000, 0.69520000,
    0.70320000, 0.69850000, 0.70220000, 0.69950000, 0.70170000}]; (*μ=1.50*)
S2y[[4]] = Mean[{0.59820000, 0.58790000, 0.60360000, 0.58450000, 0.59940000,
    0.58210000, 0.59390000, 0.58890000, 0.60540000, 0.60190000}]; (*μ=2.00*)
S2y[[5]] = Mean[{0.49030000, 0.48710000, 0.49970000, 0.49900000, 0.49380000,
    0.50130000, 0.50110000, 0.49250000, 0.49840000, 0.49410000}]; (*μ=2.50*)
S2y[[6]] = Mean[{0.39500000, 0.41120000, 0.41090000, 0.39800000, 0.39990000,
    0.39410000, 0.38380000, 0.40080000, 0.39800000, 0.40120000}]; (*μ=3.00*)
S2y[[7]] = Mean[{0.30210000, 0.29730000, 0.29220000, 0.29440000, 0.29060000,
    0.30140000, 0.29240000, 0.30420000, 0.30960000, 0.27610000}]; (*μ=3.50*)
S2y[[8]] = Mean[{0.22260000, 0.22290000, 0.19090000, 0.19620000, 0.18850000,
    0.20140000, 0.19270000, 0.22510000, 0.20750000, 0.19920000}]; (*μ=4.00*)
S2y[[9]] = Mean[{0.10600000, 0.11380000, 0.11970000, 0.13180000, 0.11210000,
    0.11180000, 0.13920000, 0.10210000, 0.10610000, 0.10630000}]; (*μ=4.50*)
S2y[[10]] = Mean[{0.05320000, 0.04360000, 0.05130000, 0.07060000, 0.06900000,
    0.05620000, 0.04920000, 0.05300000, 0.04680000, 0.0381000}]; (*μ=5.00*)
S2y[[11]] = Mean[{0.00450000, 0.00620000, 0.00400000, 0.00510000, 0.00830000,
    0.01020000, 0.00430000, 0.00540000, 0.00780000, 0.00380000}]; (*μ=6.00*)
```

Plot

In[67]:=
```
p1 = TheorPlot["Blocking Probability(λ = 10)",
   PBlock[10/(2 μ)], {μ, 1, 10}, {0, 1}, "Service rate (μ)", "Probability"];
Show[p1, S1Plot[x, S1y], S2Plot[x, S2y]]
```

Out[68]=



ρ Plot (Choose and λ, μ such that ρ -> {0, 1})

In[69]:=
```
x1 = {0.55, 0.6, 0.65}; (*ρ values*)
x2 = {0.7, 0.75, 0.8}; (*ρ values*)
x3 = {0.85, 0.9, 0.95}; (*ρ values*)

S1y1 = ConstantArray[0, 3];
S1y2 = ConstantArray[0, 3];
S1y3 = ConstantArray[0, 3];

S2y1 = ConstantArray[0, 3];
S2y2 = ConstantArray[0, 3];
S2y3 = ConstantArray[0, 3];
```

Strategy 1 Data

In[78]:=
```
(*λ = 0.25*)
S1y1[[1]] = Mean[{0.00120000, 0.00080000, 0.00140000, 0.00130000, 0.00140000,
    0.00110000, 0.00040000, 0.00070000, 0.00170000, 0.00040000}]; (*μ=0.23*)
S1y1[[2]] = Mean[{0.00220000, 0.00410000, 0.00230000, 0.00180000, 0.00100000,
    0.00130000, 0.00360000, 0.00230000, 0.00110000, 0.00190000}]; (*μ=0.21*)
S1y1[[3]] = Mean[{0.00530000, 0.00650000, 0.00680000, 0.00360000, 0.00540000,
    0.00490000, 0.00550000, 0.00520000, 0.00490000, 0.00590000}]; (*μ=0.19*)
(*λ = 5*)
S1y2[[1]] = Mean[{0.00960000, 0.00940000, 0.01110000, 0.00530000, 0.00910000,
    0.00930000, 0.00820000, 0.01010000, 0.00560000, 0.00800000}]; (*μ=3.57*)
S1y2[[2]] = Mean[{0.02030000, 0.01190000, 0.01290000, 0.01110000, 0.01540000,
    0.01130000, 0.01350000, 0.01790000, 0.01360000, 0.01610000}]; (*μ=3.33*)
S1y2[[3]] = Mean[{0.02550000, 0.02840000, 0.02380000, 0.01850000, 0.02340000,
    0.02330000, 0.02530000, 0.02360000, 0.02460000, 0.02450000}]; (*μ=3.12*)
(*λ = 0.25*)
S1y3[[1]] = Mean[{0.03780000, 0.02940000, 0.03280000, 0.03650000, 0.03210000,
    0.03430000, 0.03580000, 0.03160000, 0.03200000, 0.03290000}]; (*μ=5.88*)
S1y3[[2]] = Mean[{0.05400000, 0.04470000, 0.04160000, 0.05440000, 0.04710000,
    0.04790000, 0.04520000, 0.05570000, 0.05110000, 0.04850000}]; (*μ=5.56*)
S1y3[[3]] = Mean[{0.07280000, 0.06320000, 0.07420000, 0.06770000, 0.06580000,
    0.07610000, 0.06780000, 0.06570000, 0.06360000, 0.06390000}]; (*μ=5.26*)
```

Strategy 2 Data

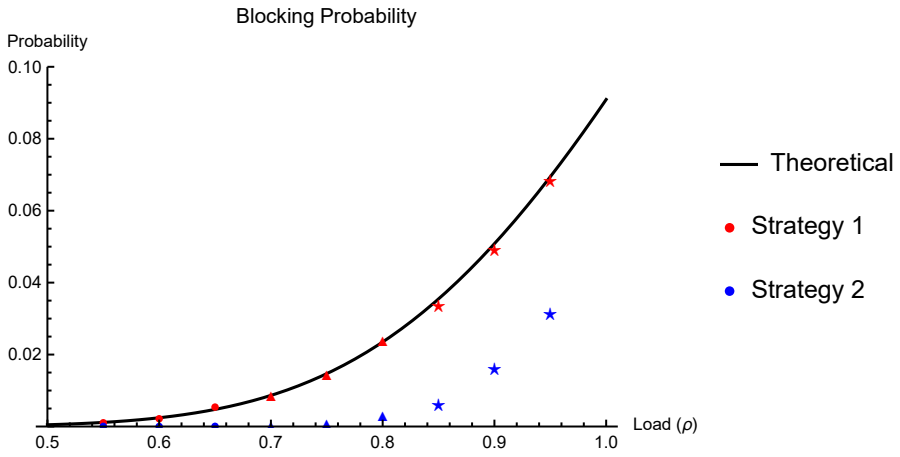
In[87]:=
```
(*λ = 0.25*)
S2y1[[1]] = Mean[{0.00000000, 0.00020000, 0.00000000, 0.00000000, 0.00000000,
    0.00000000, 0.00010000, 0.00000000, 0.00000000, 0.00000000}]; (*μ=0.23*)
S2y1[[2]] = Mean[{0.00000000, 0.00000000, 0.00000000, 0.00000000, 0.00000000,
    0.00000000, 0.00000000, 0.00000000, 0.00000000, 0.00000000}]; (*μ=0.21*)
S2y1[[3]] = Mean[{0.00000000, 0.00000000, 0.00000000, 0.00000000, 0.00000000,
    0.00000000, 0.00000000, 0.00000000, 0.00050000, 0.00000000}]; (*μ=0.19*)
(*λ = 5*)
S2y2[[1]] = Mean[{0.00000000, 0.00040000, 0.00020000, 0.00000000, 0.00000000,
    0.00030000, 0.00000000, 0.00030000, 0.00110000, 0.00030000}]; (*μ=3.57*)
S2y2[[2]] = Mean[{0.00000000, 0.00120000, 0.00040000, 0.00200000, 0.00080000,
    0.00050000, 0.00150000, 0.00110000, 0.00020000, 0.00250000}]; (*μ=3.33*)
S2y2[[3]] = Mean[{0.00500000, 0.00150000, 0.00160000, 0.00220000, 0.00230000,
    0.00480000, 0.00190000, 0.00440000, 0.00760000, 0.00040000}]; (*μ=3.12*)
(*λ = 0.25*)
S2y3[[1]] = Mean[{0.00530000, 0.00100000, 0.00510000, 0.00430000, 0.00510000,
    0.00480000, 0.00960000, 0.00530000, 0.01110000, 0.00720000}]; (*μ=5.88*)
S2y3[[2]] = Mean[{0.02040000, 0.01860000, 0.01350000, 0.01920000, 0.02020000,
    0.01450000, 0.01410000, 0.00950000, 0.01570000, 0.01420000}]; (*μ=5.56*)
S2y3[[3]] = Mean[{0.03010000, 0.03410000, 0.03260000, 0.02090000, 0.04240000,
    0.02990000, 0.04180000, 0.03430000, 0.02490000, 0.02160000}]; (*μ=5.26*)
```

Plot

In[96]:=
```
p1 = TheorPlot["Blocking Probability",
   PBlock[ρ], {ρ, 0.5, 1}, {0, 0.1}, "Load (ρ)", "Probability"];
Show[
 p1,
 ListPlot[Transpose[{x1, S1y1}], PlotStyle → Red, PlotLegends → {"Strategy 1"}],
 ListPlot[Transpose[{x2, S1y2}], PlotStyle → Red, PlotMarkers → "▲"],
 ListPlot[Transpose[{x3, S1y3}], PlotStyle → Red, PlotMarkers → "★"],

 ListPlot[Transpose[{x1, S2y1}], PlotStyle → Blue, PlotLegends → {"Strategy 2"}],
 ListPlot[Transpose[{x2, S2y2}], PlotStyle → Blue, PlotMarkers → "▲"],
 ListPlot[Transpose[{x3, S2y3}], PlotStyle → Blue, PlotMarkers → "★"]
]
```

Out[97]=



In[98]:=

Avg Queue Length

λ Plot (Set μ = 0.5) (λ → {0,1})

In[99]:=
```
x = {0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0};
S1y = ConstantArray[0, 11];
S2y = ConstantArray[0, 11];
```

Strategy 1 Data

In[102]:=

```
S1y[[1]] = Mean[{0}]; (*λ=0*)
S1y[[2]] = Mean[{0.27812155, 0.27917982, 0.28234235, 0.28090437, 0.27502422,
    0.28645980, 0.27658120, 0.28248534, 0.27864799, 0.28441944}];(*λ=0.1*)
S1y[[3]] = Mean[{0.37377244, 0.37434106, 0.36735607, 0.37049987, 0.36969532,
    0.37577329, 0.37040802, 0.36448019, 0.37435922, 0.35998759}];(*λ=0.2*)
S1y[[4]] = Mean[{0.51743916, 0.50252138, 0.50906737, 0.50049042, 0.49016755,
    0.52232179, 0.49602856, 0.50990367, 0.50988298, 0.52593151}];(*λ=0.3*)
S1y[[5]] = Mean[{0.73476267, 0.69990102, 0.75399391, 0.73976738, 0.72359324,
    0.72103923, 0.70397074, 0.71805659, 0.71411848, 0.76674931}];(*λ=0.4*)
S1y[[6]] = Mean[{1.01879753, 1.01701309, 1.04208395, 1.01036931, 0.98754096,
    1.03305731, 1.14035776, 1.02687181, 0.97531187, 1.02095626}]; (*λ=0.5*)
S1y[[7]] = Mean[{1.44743815, 1.44860866, 1.44407298, 1.36778045, 1.48151663,
    1.34187540, 1.39496826, 1.38280814, 1.27519000, 1.52493177}]; (*λ=0.6*)
S1y[[8]] = Mean[{2.17281628, 2.22497492, 1.87851589, 2.27955924, 2.32348960,
    2.19455385, 2.24494741, 2.17282426, 2.33799616, 2.08365685}]; (*λ=0.7*)
S1y[[9]] = Mean[{3.01138635, 3.06190401, 2.87510925, 2.99500267, 2.86024615,
    3.19179502, 3.24316800, 2.91313481, 3.04060059, 2.93322356}]; (*λ=0.8*)
S1y[[10]] = Mean[{4.28144685, 3.95490748, 4.08620737, 4.34640016, 3.72486657,
    4.13716406, 4.00421790, 3.80950294, 4.19516992, 3.79053123}]; (*λ=0.9*)
S1y[[11]] = Mean[{4.97668359, 5.16543192, 4.98147021, 4.59681840, 5.05998187,
    4.77437066, 5.36041912, 4.83778264, 4.84485931, 5.24269465}];(*λ=1.0*)
```

Strategy 2 Data

In[113]:=

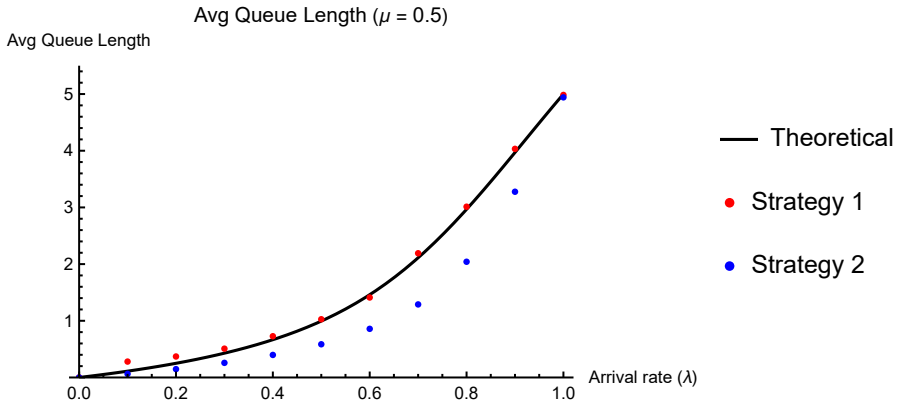
```
S1y[[1]] = Mean[{0}]; (*λ=0*)
S2y[[2]] = Mean[{0.06536979, 0.06260068, 0.06314546, 0.06170620, 0.06537324,
    0.06155913, 0.06481835, 0.06260530, 0.06361561, 0.06407284}]; (*λ=0.10*)
S2y[[3]] = Mean[{0.14010236, 0.14830631, 0.15175047, 0.14828312, 0.14985400,
    0.15086532, 0.13928507, 0.14890547, 0.15173436, 0.14527867}]; (*λ=0.20*)
S2y[[4]] = Mean[{0.26691398, 0.26607286, 0.24384213, 0.25653151, 0.26549190,
    0.26256204, 0.25655009, 0.26041379, 0.24434903, 0.25690492}]; (*λ=0.30*)
S2y[[5]] = Mean[{0.39844645, 0.39823027, 0.36514624, 0.42321004, 0.39746349,
    0.38884520, 0.40294212, 0.40224320, 0.40056832, 0.39835945}]; (*λ=0.40*)
S2y[[6]] = Mean[{0.60638956, 0.57368729, 0.57228816, 0.61268530, 0.59636510,
    0.60368014, 0.61229289, 0.53986456, 0.57039908, 0.57009240}]; (*λ=0.50*)
S2y[[7]] = Mean[{0.92129219, 0.84704801, 0.92742352, 0.81322572, 0.91591046,
    0.80728829, 0.88015422, 0.83200355, 0.84766603, 0.78955210}]; (*λ=0.60*)
S2y[[8]] = Mean[{1.34565792, 1.27800541, 1.34146606, 1.34536363, 1.14118692,
    1.25015832, 1.36150801, 1.32801485, 1.25419905, 1.24166143}]; (*λ=0.70*)
S2y[[9]] = Mean[{1.91260828, 1.92923642, 2.07157608, 2.21098656, 1.94939997,
    2.02207486, 1.96543719, 1.94357444, 2.12280338, 2.28713070}]; (*λ=0.80*)
S2y[[10]] = Mean[{3.32437087, 3.25329095, 3.26662087, 3.30284874, 3.48112319,
    3.04808354, 3.54627297, 3.06672230, 3.32880023, 3.14734413}]; (*λ=0.90*)
S2y[[11]] = Mean[{4.80960050, 4.91315249, 4.59867643, 5.01817104, 4.80942355,
    5.02451455, 4.84988595, 5.19482993, 4.85458417, 5.34021811}]; (*λ=1.00*)
```

Plot

In[124]:=

```
p1 = TheorPlot["Avg Queue Length (μ = 0.5)", L[ρ],
   {ρ, 0, 1}, {0, 5.5}, "Arrival rate (λ)", "Avg Queue Length"];
Show[p1, S1Plot[x, S1y], S2Plot[x, S2y]]
```

Out[125]=



μ Plot (Set $\lambda = 2$) ($\mu \to \{1,10\}$)

In[126]:=

```
x = {1, 1.1, 1.25, 1.4, 1.6, 2, 2.5, 3.3, 5, 8, 10};
S1y = ConstantArray[0, 11];
S2y = ConstantArray[0, 11];
```

Strategy 1 Data

In[129]:=

```
S1y[[1]] = Mean[{5.15654684, 4.64676863, 5.11686747, 4.89935683, 4.86206061,
    5.04029537, 5.13621760, 4.80923353, 4.92232986, 4.70682343}]; (*μ=1*)
S1y[[2]] = Mean[{4.26765761, 4.25699744, 4.28892516, 4.20443371, 3.98112522,
    3.87089126, 3.73844931, 3.93255617, 3.66781996, 3.97195544}];(*μ=1.1*)
S1y[[3]] = Mean[{2.68651599, 2.91022056, 3.10376675, 2.87670642, 3.07882353,
    2.74220542, 2.90016994, 3.10172297, 3.01156660, 2.88654398}];(*μ=1.25*)
S1y[[4]] = Mean[{2.21765558, 2.35530239, 2.28311613, 2.08258323, 2.42580750,
    2.31424430, 2.17626586, 2.32942807, 2.16329366, 2.09253964}];(*μ=1.4*)
S1y[[5]] = Mean[{1.65615181, 1.67112618, 1.73244216, 1.62104878, 1.61497955,
    1.64538947, 1.65410880, 1.43843227, 1.70073203, 1.58076391}];(*μ=1.6*)
S1y[[6]] = Mean[{1.02609193, 1.05548183, 0.99667838, 0.95671957, 0.94410881,
    0.92881340, 1.01741182, 0.95252708, 1.03245211, 1.06848971}]; (*μ=2*)
S1y[[7]] = Mean[{0.69164342, 0.74272352, 0.74923060, 0.75718299, 0.74740726,
    0.73255343, 0.72972596, 0.72208835, 0.67032940, 0.73173235}]; (*μ=2.5*)
S1y[[8]] = Mean[{0.53903193, 0.48850577, 0.49377528, 0.51816052, 0.51763212,
    0.50821747, 0.52422711, 0.53620359, 0.52353680, 0.52625844}]; (*μ=3.3*)
S1y[[9]] = Mean[{0.38411495, 0.37586180, 0.36841073, 0.37813917, 0.37132228,
    0.36124597, 0.35787286, 0.36319304, 0.35725613, 0.37132985}]; (*μ=5*)
S1y[[10]] = Mean[{0.28974328, 0.30233927, 0.30195036, 0.29824036, 0.29860176,
    0.29564719, 0.28727321, 0.30087945, 0.29487241, 0.30378689}]; (*μ=8*)
S1y[[11]] = Mean[{0.28011530, 0.27264588, 0.28818681, 0.28308032, 0.28637158,
    0.28604515, 0.28447798, 0.28452140, 0.28423670, 0.28436819}];(*μ=10*)
```

Strategy 2 Data

In[140]:=

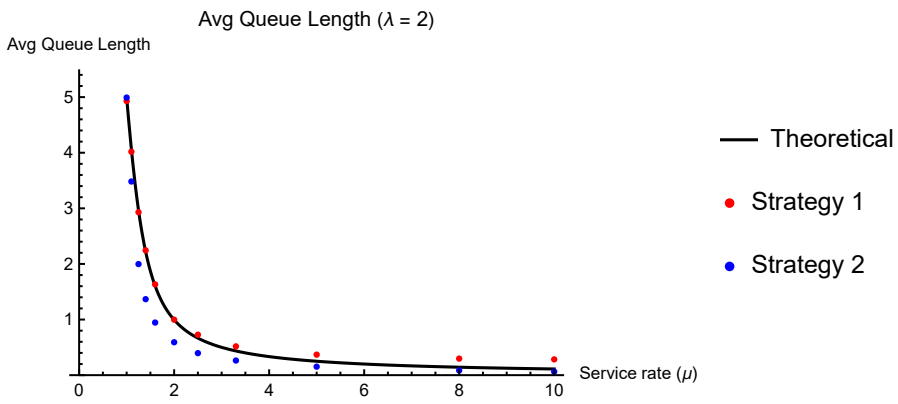
```
S2y[[1]] = Mean[{5.19786646, 5.15060965, 4.84286255, 5.26104094, 4.93490084,
    4.74567092, 4.60953317, 5.12487843, 4.92663107, 5.12767578}]; (*μ=1*)
S2y[[2]] = Mean[{3.74008988, 3.25620033, 3.40267702, 3.19597965, 3.56605478,
    3.69709312, 3.52341817, 3.73326767, 3.33728377, 3.37297789}];(*μ=1.1*)
S2y[[3]] = Mean[{2.03498860, 2.00922391, 1.85618142, 2.07635056, 1.94702545,
    2.11776767, 2.05453031, 2.07470347, 1.90765952, 1.89787363}];(*μ=1.25*)
S2y[[4]] = Mean[{1.33001304, 1.43062022, 1.30211742, 1.23641726, 1.34073607,
    1.42613701, 1.45356637, 1.37322921, 1.33993586, 1.43285730}];(*μ=1.4*)
S2y[[5]] = Mean[{0.91043087, 0.95727056, 0.90138416, 0.95294305, 0.95750773,
    1.02062940, 0.92651476, 0.90171067, 0.93027219, 1.00030335}];(*μ=1.6*)
S2y[[6]] = Mean[{0.59274623, 0.60896270, 0.59781282, 0.60795296, 0.57679503,
    0.58003040, 0.58919818, 0.59346380, 0.58745194, 0.58115816}]; (*μ=2*)
S2y[[7]] = Mean[{0.39121316, 0.38838408, 0.39391456, 0.42366643, 0.38417500,
    0.38873560, 0.39577165, 0.40303291, 0.40476277, 0.38349866}]; (*μ=2.5*)
S2y[[8]] = Mean[{0.25450092, 0.25981602, 0.27596353, 0.27542135, 0.26163984,
    0.26516716, 0.25666549, 0.26408336, 0.25191659, 0.26604067}]; (*μ=3.3*)
S2y[[9]] = Mean[{0.14650723, 0.15476159, 0.15644808, 0.14882674, 0.15231502,
    0.14839239, 0.15322316, 0.15680978, 0.15472419, 0.15384838}]; (*μ=5*)
S2y[[10]] = Mean[{0.08213157, 0.09009947, 0.08269839, 0.08553719, 0.08192000,
    0.08664321, 0.08374863, 0.09149525, 0.07927509, 0.08188666}]; (*μ=8*)
S2y[[11]] = Mean[{0.06229487, 0.06439458, 0.06173470, 0.06816146, 0.06062673,
    0.06681181, 0.06528659, 0.06051067, 0.06330695, 0.06053193}];(*μ=10*)
```

Plot

In[151]:=

```
p1 = TheorPlot["Avg Queue Length (λ = 2)", L[2/(2 μ)],
   {μ, 1, 10}, {0, 5.5}, "Service rate (μ)", "Avg Queue Length"];
Show[p1, S1Plot[x, S1y], S2Plot[x, S2y]]
```

Out[152]=



ρ Plot (Choose and λ, μ such that ρ -> {0, 1})

In[153]:=

```
x1 = {0.55, 0.6, 0.65}; (*ρ values*)
x2 = {0.7, 0.75, 0.8}; (*ρ values*)
x3 = {0.85, 0.9, 0.95}; (*ρ values*)

S1y1 = ConstantArray[0, 3];
S1y2 = ConstantArray[0, 3];
S1y3 = ConstantArray[0, 3];

S2y1 = ConstantArray[0, 3];
S2y2 = ConstantArray[0, 3];
S2y3 = ConstantArray[0, 3];
```

Strategy 1 Data

In[162]:=

```
(*λ = 0.25*)
S1y1[[1]] = Mean[{1.15531214, 1.21869925, 1.28900006, 1.33386191, 1.13682270,
    1.15290700, 1.22556747, 1.23430018, 1.21660803, 1.18684098}]; (*μ=0.23*)
S1y1[[2]] = Mean[{1.51185520, 1.39029011, 1.35696517, 1.38450859, 1.59600895,
    1.49702227, 1.44498632, 1.55945485, 1.43807857, 1.55083275}]; (*μ=0.21*)
S1y1[[3]] = Mean[{1.96241110, 1.64408204, 1.96332693, 1.66175862, 1.95344493,
    1.77917061, 1.74326280, 1.77672366, 1.75858461, 1.81967359}]; (*μ=0.19*)
(*λ = 5*)
S1y2[[1]] = Mean[{2.03176496, 2.04055595, 2.04394983, 2.27045736, 2.06349680,
    2.28564309, 2.01583635, 2.30970666, 2.09431160, 2.08006159}]; (*μ=3.57*)
S1y2[[2]] = Mean[{2.54243855, 2.40154225, 2.34221689, 2.44678758, 2.52654625,
    2.31788222, 2.28951989, 2.57675792, 2.47717541, 2.45028296}]; (*μ=3.33*)
S1y2[[3]] = Mean[{2.80287385, 2.96229346, 2.97584208, 2.86375272, 2.66806890,
    2.83891250, 3.23629035, 2.62401794, 3.14703712, 3.09056076}]; (*μ=3.12*)
(*λ = 0.10*)
S1y3[[1]] = Mean[{3.51837449, 3.19857582, 3.28221643, 3.28378394, 3.58672358,
    3.59332177, 3.31655084, 3.48364529, 3.49244826, 3.29161571}]; (*μ=5.88*)
S1y3[[2]] = Mean[{3.79710207, 3.61342536, 3.69200665, 3.69664863, 3.81528317,
    3.97310964, 3.81240302, 3.87392136, 3.78536101, 3.77300834}]; (*μ=5.56*)
S1y3[[3]] = Mean[{4.81943256, 4.21843911, 4.74279921, 4.66488347, 4.51950511,
    4.43081372, 4.44390272, 4.15939349, 4.93368604, 4.60413132}]; (*μ=5.26*)
```

Strategy 2 Data

In[171]:=

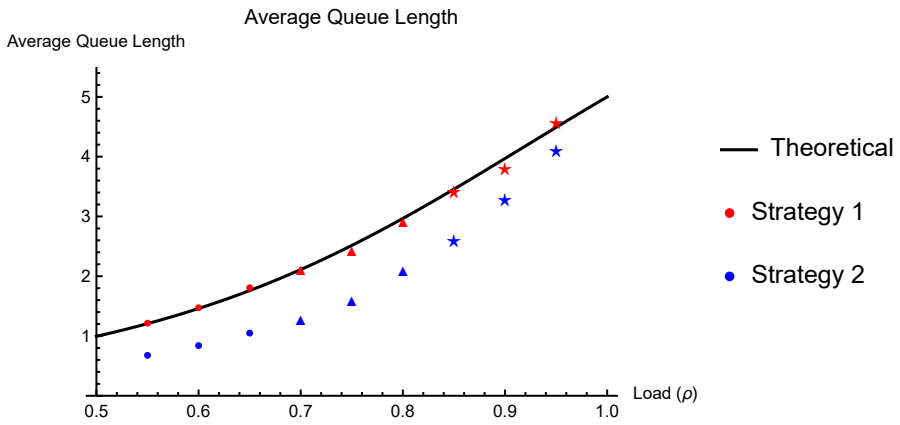
```
(*λ = 0.25*)
S2y1[[1]] = Mean[{0.68247919, 0.68170096, 0.68043692, 0.64929440, 0.66217048,
    0.67747527, 0.65390199, 0.66127010, 0.69071106, 0.72557092}]; (*μ=0.23*)
S2y1[[2]] = Mean[{0.85766281, 0.84796094, 0.83006959, 0.84553738, 0.84168618,
    0.87180444, 0.82063805, 0.81838142, 0.82981149, 0.83097880}]; (*μ=0.21*)
S2y1[[3]] = Mean[{1.07360689, 1.08562464, 1.07607798, 1.06976652, 1.00021212,
    1.08022016, 0.95542068, 1.06846477, 1.01086179, 1.06346163}]; (*μ=0.19*)
(*λ = 5*)
S2y2[[1]] = Mean[{1.35176590, 1.25341056, 1.17115280, 1.32831025, 1.28257096,
    1.35378861, 1.22918919, 1.23473717, 1.30008399, 1.22321618}]; (*μ=3.57*)
S2y2[[2]] = Mean[{1.73587937, 1.54119009, 1.56825984, 1.72874801, 1.76349526,
    1.50297664, 1.45209356, 1.68583892, 1.53350488, 1.51943343}]; (*μ=3.33*)
S2y2[[3]] = Mean[{2.16181284, 2.01676406, 1.97946175, 2.29339074, 1.83493430,
    2.27233014, 2.13880442, 1.92701521, 2.10796980, 2.23726778}]; (*μ=3.12*)
(*λ = 10*)
S2y3[[1]] = Mean[{2.86603402, 2.59580635, 2.63920240, 2.82234357, 2.67683811,
    2.41647906, 2.30300981, 2.42462973, 2.37630412, 2.68187889}]; (*μ=5.88*)
S2y3[[2]] = Mean[{3.46522964, 3.34609025, 3.47332330, 3.37898694, 3.41772043,
    3.32910215, 3.39303808, 3.06161302, 3.04816600, 2.81413747}]; (*μ=5.56*)
S2y3[[3]] = Mean[{4.42097582, 4.06414351, 3.96092468, 3.93833509, 4.21242867,
    4.00361065, 4.15499465, 4.08814180, 3.80357140, 4.21349729}]; (*μ=5.26*)
```

Plot

In[180]:=
```
p1 = TheorPlot["Average Queue Length", L[ρ],
   {ρ, 0.5, 1}, {0, 5.5}, "Load (ρ)", "Average Queue Length"];
Show[
 p1,
 ListPlot[Transpose[{x1, S1y1}], PlotStyle → Red, PlotLegends → {"Strategy 1"}],
 ListPlot[Transpose[{x2, S1y2}], PlotStyle → Red, PlotMarkers → "▲"],
 ListPlot[Transpose[{x3, S1y3}], PlotStyle → Red, PlotMarkers → "★"],

 ListPlot[Transpose[{x1, S2y1}], PlotStyle → Blue, PlotLegends → {"Strategy 2"}],
 ListPlot[Transpose[{x2, S2y2}], PlotStyle → Blue, PlotMarkers → "▲"],
 ListPlot[Transpose[{x3, S2y3}], PlotStyle → Blue, PlotMarkers → "★"]
]
```

Out[181]=



In[182]:=

Avg Sojourn Time

λ Plot (Set μ = 0.5) (λ → {0,1})

In[183]:=
```
x = {0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0};
S1y = ConstantArray[0, 11];
S2y = ConstantArray[0, 11];
```

Strategy 1 Data

In[186]:=

```
S1y[[1]] = Mean[{∞}]; (*λ=0*)
S1y[[2]] = Mean[{2.81358176, 2.83475860, 2.83207586, 2.83291027, 2.73862840,
    2.84147374, 2.84258868, 2.80004901, 2.77923150, 2.83119199}];(*λ=0.1*)
S1y[[3]] = Mean[{1.79935562, 1.83643982, 1.89169390, 1.84523658, 1.84604295,
    1.78515374, 1.82535414, 1.90006331, 1.85848296, 1.82715428}];(*λ=0.2*)
S1y[[4]] = Mean[{1.74189267, 1.77278498, 1.70198137, 1.69297520, 1.70137984,
    1.65396446, 1.71999639, 1.81834663, 1.62005137, 1.69623777}];(*λ=0.3*)
S1y[[5]] = Mean[{1.93578952, 1.80708930, 1.71258729, 1.78679873, 1.79012153,
    1.83269854, 1.89686116, 1.84274355, 1.83322636, 1.93842355}];(*λ=0.4*)
S1y[[6]] = Mean[{2.07704372, 2.08629478, 2.14490980, 2.19565977, 1.95867324,
    2.15082653, 2.10361202, 2.15939524, 2.11644579, 2.11367681}]; (*λ=0.5*)
S1y[[7]] = Mean[{2.32797589, 2.38871560, 2.64483769, 2.36895260, 2.67264764,
    2.67252411, 2.52264919, 2.72369338, 2.35110069, 2.44533339}]; (*λ=0.6*)
S1y[[8]] = Mean[{2.78278393, 2.91138933, 3.14645367, 3.00721159, 3.11340963,
    3.25289972, 3.10810542, 2.91400409, 2.74783930, 3.19990098}]; (*λ=0.7*)
S1y[[9]] = Mean[{3.79253325, 3.82941603, 3.52095384, 3.96262679, 3.92803821,
    3.82492114, 3.82957452, 3.84029596, 3.63396139, 4.07360015}]; (*λ=0.8*)
S1y[[10]] = Mean[{4.68272912, 4.71468203, 4.29457237, 4.49904664, 4.71143118,
    4.35057620, 4.82839938, 4.85587240, 4.70603549, 4.40019867}]; (*λ=0.9*)
S1y[[11]] = Mean[{5.00694663, 5.21161105, 5.82765637, 5.37998847, 5.48824024,
    5.45233759, 5.66345786, 5.49111459, 5.34533339, 5.53350439}];(*λ=1.0*)
```

Strategy 2 Data

In[197]:=

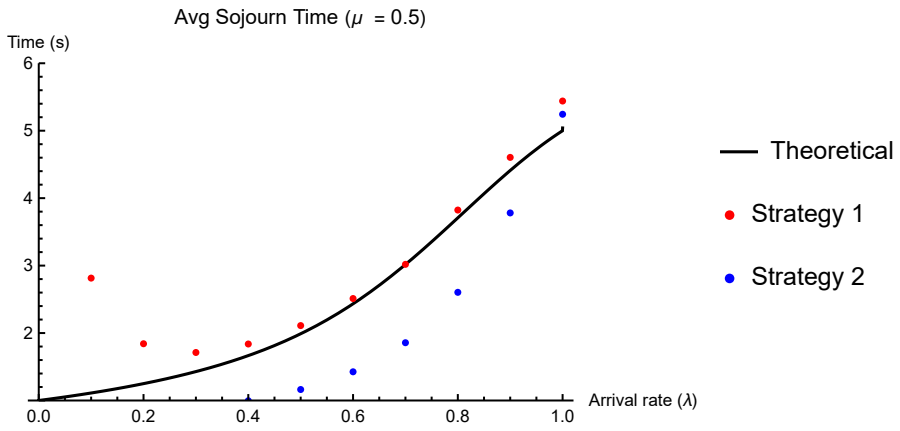
```
S2y[[1]] = Mean[{0}]; (*λ=0*)
S2y[[2]] = Mean[{0.64298712, 0.66511966, 0.63706049, 0.66358655, 0.65663172,
    0.63219891, 0.66010143, 0.62993353, 0.65916873, 0.63028134}]; (*λ=0.10*)
S2y[[3]] = Mean[{0.74110803, 0.75653560, 0.74897136, 0.74813099, 0.74582958,
    0.74937229, 0.71061940, 0.70798121, 0.74878945, 0.73921982}]; (*λ=0.20*)
S2y[[4]] = Mean[{0.89159127, 0.87880935, 0.86109516, 0.84863259, 0.88861808,
    0.87172985, 0.85624369, 0.86463984, 0.84520114, 0.85494139}]; (*λ=0.30*)
S2y[[5]] = Mean[{0.97773071, 1.01114902, 1.01733262, 0.98475822, 1.01066523,
    0.97663395, 0.97904511, 1.01865185, 1.00358934, 0.98406630}]; (*λ=0.40*)
S2y[[6]] = Mean[{1.15089730, 1.15788111, 1.12962018, 1.19385412, 1.14373902,
    1.17427127, 1.16253843, 1.17799091, 1.16771198, 1.17035346}]; (*λ=0.50*)
S2y[[7]] = Mean[{1.41669525, 1.47449251, 1.44969477, 1.44764056, 1.42844591,
    1.35350923, 1.43679564, 1.37294494, 1.51207350, 1.36332707}]; (*λ=0.60*)
S2y[[8]] = Mean[{1.85705489, 1.65689851, 1.98653231, 1.99252938, 1.80599003,
    1.95587753, 1.79803494, 1.84244317, 1.86941940, 1.80148358}]; (*λ=0.70*)
S2y[[9]] = Mean[{2.61016095, 2.31216430, 2.55554559, 2.52040291, 2.93317037,
    2.49208781, 2.67387302, 2.48838658, 2.75076040, 2.70121742}]; (*λ=0.80*)
S2y[[10]] = Mean[{3.79885694, 3.68426667, 3.90926969, 3.66805024, 3.82384740,
    3.95833224, 3.83186956, 3.57397071, 3.88318643, 3.67843784}]; (*λ=0.90*)
S2y[[11]] = Mean[{5.12833250, 5.00836830, 5.41503186, 5.12415001, 5.94154171,
    4.73831505, 5.48599420, 5.44738225, 5.68194303, 4.46558261}]; (*λ=1.00*)
```

Plot

In[208]:=

```
p1 = TheorPlot["Avg Sojourn Time (μ = 0.5)",
   S2[λ/(2 (0.5)), 0.5], {λ, 0, 1}, {1, 6}, "Arrival rate (λ)", "Time (s)"];
Show[p1, S1Plot[x, S1y], S2Plot[x, S2y]]
```

Out[209]=



μ Plot (Set $\lambda = 2$) ($\mu \to \{1,10\}$)

In[210]:=

```
x = {1, 1.1, 1.25, 1.4, 1.6, 2, 2.5, 3.3, 5, 8, 10};
S1y = ConstantArray[0, 11];
S2y = ConstantArray[0, 11];
```

Strategy 1 Data

In[213]:=

```
S1y[[1]] = Mean[{2.47945363, 2.87639322, 2.61533687, 2.74296000, 2.59663451,
    2.86423400, 2.81270753, 2.63481124, 2.77353385, 2.93856173}]; (*μ=1*)
S1y[[2]] = Mean[{1.91427051, 2.32821742, 2.08951979, 2.23466367, 2.14155298,
    2.06456559, 2.08516993, 2.20123088, 2.37264683, 2.08008178}];(*μ=1.1*)
S1y[[3]] = Mean[{1.50902266, 1.47657369, 1.53018057, 1.63632230, 1.62214962,
    1.55433074, 1.62551482, 1.39018691, 1.49267871, 1.61671383}];(*μ=1.25*)
S1y[[4]] = Mean[{1.17196285, 0.98168309, 1.04566172, 1.06843049, 1.05897364,
    1.15079895, 1.04361281, 1.13152165, 1.04665280, 1.07709132}];(*μ=1.4*)
S1y[[5]] = Mean[{0.78380105, 0.77689689, 0.82865395, 0.82181310, 0.80788252,
    0.78340151, 0.76923576, 0.79497755, 0.80933085, 0.76781921}];(*μ=1.6*)
S1y[[6]] = Mean[{0.53716975, 0.48688136, 0.51007501, 0.51453857, 0.50781391,
    0.53097685, 0.49874113, 0.55953013, 0.50831632, 0.54575677}]; (*μ=2*)
S1y[[7]] = Mean[{0.35821047, 0.37328502, 0.35951389, 0.37253318, 0.37311616,
    0.36688632, 0.37343511, 0.34445226, 0.37611168, 0.35803461}]; (*μ=2.5*)
S1y[[8]] = Mean[{0.25720168, 0.25801602, 0.25718670, 0.24688769, 0.25866247,
    0.26941833, 0.25414277, 0.24737005, 0.25908743, 0.24684418}]; (*μ=3.3*)
S1y[[9]] = Mean[{0.19624340, 0.18036522, 0.18160159, 0.18666127, 0.18023727,
    0.18327461, 0.18557650, 0.18271133, 0.18586738, 0.18434164}]; (*μ=5*)
S1y[[10]] = Mean[{0.14806625, 0.14846098, 0.14697138, 0.14629023, 0.14950863,
    0.15012869, 0.15063334, 0.15190433, 0.14577782, 0.15332870}]; (*μ=8*)
S1y[[11]] = Mean[{0.13945912, 0.14071287, 0.14120501, 0.14035143, 0.14204008,
    0.13958869, 0.13854743, 0.14003991, 0.13671653, 0.14134506}];(*μ=10*)
```

Strategy 2 Data

In[224]:=

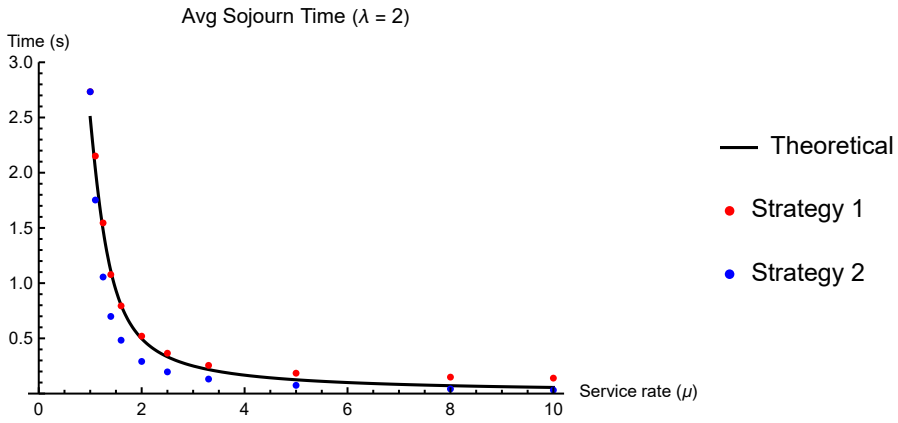
```
S2y[[1]] = Mean[{2.83564540, 2.40317412, 2.49938627, 3.00120026, 2.60851609,
    2.82606899, 3.01164201, 2.88621444, 2.64640112, 2.61359832}]; (*μ=1.00*)
S2y[[2]] = Mean[{1.72999425, 1.96711552, 1.59658700, 1.74357414, 1.57675481,
    1.89924285, 1.73137246, 1.69897174, 1.82990926, 1.75330363}]; (*μ=1.10*)
S2y[[3]] = Mean[{1.13284832, 1.00727651, 1.01481410, 1.09000477, 1.05636577,
    1.06839864, 1.07219708, 0.99114529, 1.00800771, 1.11360881}]; (*μ=1.25*)
S2y[[4]] = Mean[{0.71321703, 0.72095637, 0.69166972, 0.72604020, 0.73789078,
    0.67212118, 0.67041234, 0.68623999, 0.69065238, 0.67634655}]; (*μ=1.40*)
S2y[[5]] = Mean[{0.44034116, 0.50656120, 0.48537844, 0.47951589, 0.47363406,
    0.47603401, 0.50028738, 0.50192548, 0.49042808, 0.47826508}]; (*μ=1.60*)
S2y[[6]] = Mean[{0.30039607, 0.28637871, 0.28279710, 0.29615836, 0.27542716,
    0.29994623, 0.29651116, 0.28985686, 0.28370610, 0.29917816}]; (*μ=2.00*)
S2y[[7]] = Mean[{0.19417977, 0.19241421, 0.20127005, 0.19737440, 0.20034698,
    0.19438559, 0.19878715, 0.19868916, 0.19335701, 0.19328857}]; (*μ=2.50*)
S2y[[8]] = Mean[{0.13339028, 0.12868008, 0.13379356, 0.13157336, 0.12695597,
    0.13147186, 0.13014161, 0.13129904, 0.13462163, 0.13335571}]; (*μ=3.30*)
S2y[[9]] = Mean[{0.07769799, 0.07226369, 0.07272492, 0.07324172, 0.07801694,
    0.07200038, 0.07580947, 0.07739401, 0.07477830, 0.07372428}]; (*μ=5.00*)
S2y[[10]] = Mean[{0.04275161, 0.04183602, 0.03970371, 0.04122508, 0.04252454,
    0.04293722, 0.04405202, 0.04220263, 0.04094591, 0.04210908}]; (*μ=8.00*)
S2y[[11]] = Mean[{0.03107348, 0.03150622, 0.02944916, 0.03432063, 0.03202210,
    0.03196085, 0.03207649, 0.02986135, 0.03344013, 0.03209804}]; (*μ=10.00*)
```

Plot

In[235]:=

```
p1 = TheorPlot["Avg Sojourn Time (λ = 2)",
   S[2/(2 μ), 2], {μ, 1, 10}, {0, 3}, "Service rate (μ)", "Time (s)"];
Show[p1, S1Plot[x, S1y], S2Plot[x, S2y]]
```

Out[236]=



ρ Plot (Choose and λ, μ such that ρ -> {0, 1})

In[237]:=

```
x1 = {0.55, 0.6, 0.65}; (*ρ values*)
x2 = {0.7, 0.75, 0.8}; (*ρ values*)
x3 = {0.85, 0.9, 0.95}; (*ρ values*)

S1y1 = ConstantArray[0, 3];
S1y2 = ConstantArray[0, 3];
S1y3 = ConstantArray[0, 3];

S2y1 = ConstantArray[0, 3];
S2y2 = ConstantArray[0, 3];
S2y3 = ConstantArray[0, 3];
```

Strategy 1 Data

In[246]:=

```
(*λ = 0.25*)
S1y1[[1]] = Mean[{4.72135415, 4.72230803, 4.67352388, 4.90000283, 4.88778317,
    4.89561737, 4.83077360, 4.79215317, 5.05911920, 5.07233792}]; (*μ=0.23*)
S1y1[[2]] = Mean[{6.28886239, 5.57921692, 5.98105561, 5.66499248, 5.76494792,
    5.54039308, 5.69294477, 5.95812140, 6.08928448, 5.92782592}]; (*μ=0.21*)
S1y1[[3]] = Mean[{7.92609097, 7.68151180, 7.55713062, 7.35397752, 7.13755399,
    7.67271764, 7.56294738, 7.26604568, 7.71757806, 7.08441050}]; (*μ=0.19*)
(*λ = 5*)
S1y2[[1]] = Mean[{0.43084284, 0.48118611, 0.45422295, 0.39851286, 0.41057291,
    0.41846249, 0.45911733, 0.41988843, 0.40889369, 0.43193356}]; (*μ=3.57*)
S1y2[[2]] = Mean[{0.53116625, 0.51176062, 0.52836064, 0.46633860, 0.53467665,
    0.50541376, 0.55151669, 0.48588614, 0.50110429, 0.50820201}]; (*μ=3.33*)
S1y2[[3]] = Mean[{0.64818897, 0.59324477, 0.60537847, 0.65072739, 0.62639326,
    0.67956945, 0.59170580, 0.57515330, 0.61416363, 0.61594998}]; (*μ=3.12*)
(*λ = 10*)
S1y3[[1]] = Mean[{0.34803252, 0.38377314, 0.35629511, 0.33898764, 0.37869737,
    0.38314559, 0.32847514, 0.35250012, 0.36648361, 0.35695547}]; (*μ=5.88*)
S1y3[[2]] = Mean[{0.43109182, 0.41687027, 0.40859153, 0.44919113, 0.43643186,
    0.44983987, 0.41267184, 0.43673640, 0.39899137, 0.44636610}]; (*μ=5.56*)
S1y3[[3]] = Mean[{0.50440591, 0.46685148, 0.48791622, 0.44064471, 0.44852981,
    0.48769741, 0.47872383, 0.49923382, 0.51286672, 0.49304150}]; (*μ=5.26*)
```

Strategy 2 Data

In[255]:=

```
(*λ = 0.25*)
S2y1[[1]] = Mean[{2.75425464, 2.76425762, 2.64399249, 2.63236164, 2.63985455,
    2.76031039, 2.86098919, 2.73692376, 2.84166187, 2.72310545}]; (*μ=0.23*)
S2y1[[2]] = Mean[{3.35329531, 3.31124239, 3.28283613, 3.29009127, 3.34598210,
    3.42210113, 3.41620882, 3.39110561, 3.49250460, 3.44324307}]; (*μ=0.21*)
S2y1[[3]] = Mean[{4.45395982, 4.12489245, 4.56264976, 4.21026700, 4.27172019,
    4.70116098, 4.49402635, 4.34220217, 4.34826737, 4.02481361}]; (*μ=0.19*)
(*λ = 5*)
S2y2[[1]] = Mean[{0.26308928, 0.23557873, 0.26669950, 0.26254708, 0.26124198,
    0.25934379, 0.23865563, 0.25250456, 0.25986946, 0.25679595}]; (*μ=3.57*)
S2y2[[2]] = Mean[{0.32222126, 0.33001679, 0.34802807, 0.32535703, 0.32043255,
    0.33484454, 0.31736309, 0.34812487, 0.32267855, 0.32009036}]; (*μ=3.33*)
S2y2[[3]] = Mean[{0.41104307, 0.46030821, 0.40695432, 0.37722552, 0.40610124,
    0.41159707, 0.39272597, 0.38422833, 0.40705925, 0.41185291}]; (*μ=3.12*)
(*λ = 10*)
S2y3[[1]] = Mean[{0.25649693, 0.28718888, 0.27453427, 0.26727239, 0.27924677,
    0.26106532, 0.27149758, 0.27910018, 0.26140068, 0.26666242}]; (*μ=5.88*)
S2y3[[2]] = Mean[{0.36291813, 0.34694550, 0.33519566, 0.35761294, 0.34481674,
    0.32171440, 0.33038516, 0.36425768, 0.31662573, 0.31003779}]; (*μ=5.56*)
S2y3[[3]] = Mean[{0.41567388, 0.42410042, 0.40677401, 0.42103129, 0.43222979,
    0.44136934, 0.42637343, 0.42113894, 0.39631975, 0.42808081}]; (*μ=5.26*)
```

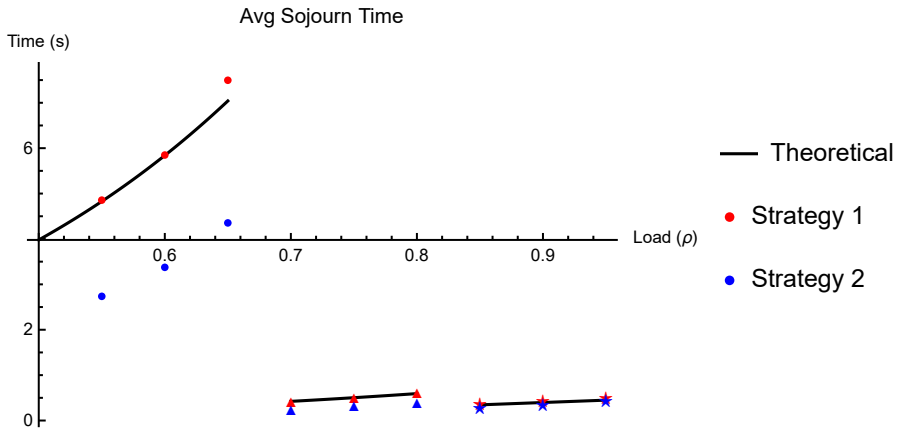
Plot

In[264]:=

```
p1 = TheorPlot["Average Queue Length", L[ρ],
    {ρ, 0.5, 1}, {0, 5.5}, "Load (ρ)", "Average Queue Length"];
Show[
 Plot[S[ρ, 0.25], {ρ, 0.5, 0.65}, PlotStyle → Black, PlotLegends → {"Theoretical"}],
 Plot[S[ρ, 5], {ρ, 0.7, 0.8}, PlotStyle → Black],
 Plot[S[ρ, 10], {ρ, 0.85, 0.95}, PlotStyle → Black],
 ListPlot[Transpose[{x1, S1y1}], PlotStyle → Red, PlotLegends → {"Strategy 1"}],
 ListPlot[Transpose[{x2, S1y2}], PlotStyle → Red, PlotMarkers → "▲"],
 ListPlot[Transpose[{x3, S1y3}], PlotStyle → Red, PlotMarkers → "★"],

 ListPlot[Transpose[{x1, S2y1}], PlotStyle → Blue, PlotLegends → {"Strategy 2"}],
 ListPlot[Transpose[{x2, S2y2}], PlotStyle → Blue, PlotMarkers → "▲"],
 ListPlot[Transpose[{x3, S2y3}], PlotStyle → Blue, PlotMarkers → "★"],
 PlotRange → All,
 AxesLabel → {"Load (ρ)", "Time (s)"},
 PlotLabel → "Avg Sojourn Time"
]
```

Out[265]=



End