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In[45]:= k = 1.23;
tend = 100;
x0 = 2.5; y0 = 2.5;
x = .; y = .;
Sol = NDSolve[{D[x[t], t] == 1 - x[t] * y[t] * y[t], D[y[t], t] ==
    k * (x[t] * y[t] * y[t] - y[t]), x[0] == x0, y[0] == y0}, {x, y}, {t, 0, tend}];
In[50]:= P1 = ParametricPlot[{Evaluate[x[t] /. First[Sol]], Evaluate[y[t] /. First[Sol]]},
    {t, 0, tend}, PlotPoints -> 2000, Mesh -> False,
    PlotRange -> {{0, 6.5}, {0, 6.5}}, PlotStyle -> Black,
    FrameLabel -> {Style["Aα", FontFamily -> "Times New Roman", FontSlant -> Italic,
        FontSize -> 21, FontColor -> Black], Style["Cα", FontFamily ->
        "Times New Roman", FontSlant -> Italic, FontSize -> 21, FontColor -> Black]},
    RotateLabel -> True, Frame -> {{Automatic, False}, {Automatic, False}},
    FrameTicks -> {{{0, 1, 2, 3, 4, 5, 6, 7}, None}, {{0, 1, 2, 3, 4, 5, 6, 7}, None}},
    Epilog -> {Inset[Graphics[{Black, Text[Style[
        " ΑΡΧΛΚΕΣ συνθήκες ", 21, FontFamily -> "MS Serif"]]}], {4.8, 6.7}],
        Inset[Graphics[
            {Black, Text[Style[" θ. ασταθές σ.λ. ", 21, FontFamily -> "MS Serif"]]}],
            {4.6, 6.1}], {Red, Text[Style["*"], 20], {3.2, 6.1}},
            {Red, Text[Style["*"], 25], {1, 1}}]};
G0 = Graphics[{PointSize[0.02], Blue, Point[{3.2, 6.7}]}];
G1 = Graphics[{PointSize[0.02], Blue, Point[{x0, y0}]}];

x0 = 0.5585; y0 = 1;
Sol11 = NDSolve[
    {D[x[t], t] == 1 - x[t] * y[t] * y[t], D[y[t], t] == k * (x[t] * y[t] * y[t] - y[t]),
    x[0] == x0, y[0] == y0}, {x, y}, {t, 0, tend}];
P11 = ParametricPlot[
    {Evaluate[x[t] /. First[Sol11]], Evaluate[y[t] /. First[Sol11]]}, {t, 0, tend},
    PlotPoints -> 2000, Mesh -> False, PlotStyle -> {Green, Thickness[0.01]};
G11 = Graphics[{PointSize[0.02], Blue, Point[{x0, y0}]}];

x0 = 0.4; y0 = 1;
Sol12 = NDSolve[
    {D[x[t], t] == 1 - x[t] * y[t] * y[t], D[y[t], t] == k * (x[t] * y[t] * y[t] - y[t]),
    x[0] == x0, y[0] == y0}, {x, y}, {t, 0, tend}];
P12 = ParametricPlot[
    {Evaluate[x[t] /. First[Sol12]], Evaluate[y[t] /. First[Sol12]]},
    {t, 0, tend}, PlotPoints -> 2000, Mesh -> False, PlotStyle -> Black};
G12 = Graphics[{PointSize[0.02], Blue, Point[{x0, y0}]}];

x0 = 0; y0 = 2;

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Sol13 = NDSolve[
  {D[x[t], t] == 1 - x[t] * y[t] * y[t], D[y[t], t] == k * (x[t] * y[t] * y[t] - y[t]),
  x[0] == x0, y[0] == y0}, {x, y}, {t, 0, tend}];
P13 = ParametricPlot[
  {Evaluate[x[t] /. First[Sol13]], Evaluate[y[t] /. First[Sol13]]},
  {t, 0, tend}, PlotPoints -> 2000, Mesh -> False, PlotStyle -> Black];
G13 = Graphics[{PointSize[0.02], Blue, Point[{x0, y0}]}];

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Show[P1, P11, P12, P13, G0, G1, G11, G12, G13,
  ImageSize -> {450, 450}, AspectRatio -> Full, PlotLabel -> None,
  LabelStyle -> {21, GrayLevel[0]}, PlotRange -> {{0, 6.2}, {0, 7}}]

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