```
In[•]:= N = 200 000;
        beta = 0.0001;
        gamma = 9.5;
        mu = 0;
        gamma / beta
        S0 = 98 000;
        I0 = 50;
        R0 = N - S0 - I0;
        tend = 100;
        S =.;
        I =.;
        R =.;
Out[•]= 95 000.

In[•]:= S0 - gamma / beta
Out[•]= 3000.

In[•]:= gamma / beta - 90 800
Out[•]= 4200.

In[•]:= Sol1 = NDSolve[{D[S[t], t] == -beta * S[t] * I[t],
          D[I[t], t] == beta * S[t] * I[t] - (gamma) * I[t], D[R[t], t] == gamma * I[t],
          S[0] == S0, I[0] == I0, R[0] == R0}, {S, I, R}, {t, 0, tend}];
        Plot1 =
          ParametricPlot[{Evaluate[S[t] /. First[Sol1]], Evaluate[I[t] /. First[Sol1]]},
            {t, 0, tend}, PlotPoints → 200, Mesh → False, AxesLabel → {t, I},
            PlotRange → {{85 000, 100 000}, {0, 120}}, PlotStyle → Black,
            FrameLabel → {Style["Πλήθος ευάλωτων", FontFamily → "MS Serif",
                FontSize → 21, FontColor → Black], Style["Πλήθος μολυσμένων",
                FontFamily → "MS Serif", FontSize → 21, FontColor → Black]},
            RotateLabel → True, Frame → {{Automatic, False}, {Automatic, False}},
            Epilog → {Inset[Graphics[{Black,
                  Text[Style[" (S₀,I₀) ", 21, FontFamily → "MS Serif"]]}], {98 000, 45}],
               Inset[Graphics[
                  {Black, Text[Style["(S∞,0)", 21, FontFamily → "MS Serif"]]}], {92 500, 5}],
               Inset[Graphics[{Black, Text[Style[" ▼ ", 21, FontFamily → "MS Serif"]]}],
                {8600, 50}], {Green, Text[Style["✶", 20], {90 800, 0.5}]}}, FrameTicks →
              {{{#, ScientificForm@#} & /@ {0, 20, 40, 60, 80, 100, 150, 200, 250}, None},
                {{#, ScientificForm@#} & /@ {85 000, 90 000, 95 000, 100 000}, None}}];

In[•]:= Plot2 = ParametricPlot[{95 000, u}, {u, 0, 96}, PlotStyle → {Black, Dashed, Thick}];
        P1 = Graphics[{PointSize[0.02], Blue, Point[{S0, I0}]}];
        P3 = Graphics[{PointSize[0.02], Point[{90 800, 0.5}]}];
```

```
In[ ]:= P4 = Graphics[Arrow[{{97 030, 75}, {96 930, 77}}]];
       P5 = Graphics[Arrow[{{91 770, 40}, {91 720, 38}}]];
       Pmain = Show[Plot1, Plot2, P1, P4, P5, ImageSize → {450, 450},
         AspectRatio → Full, PlotLabel → None, LabelStyle → {21, GrayLevel[0]}]
```

Out[ ]=