In[29]:= StreamPlot[{1, t^2/(y*(1+t^3))}, {t, -3, 3}, {y, -4, 4}, StreamPoints -> 10000]

Out[29]=

In[23]:= -1 + Exp[-3.0/2]
Out[23]= -0.77687

In[22]:= CubeRoot[-1 + Exp[-3.0/2]]
Out[22]= -0.919283

In[18]:= y[1.52] /. sol1
Out[18]= {1.41579}

In[11]:= DSolve[y'[t] == t^2/(y[t]*(1+t^3)), y[t], t]
Out[11]= \{\{y[t] \to \frac{2}{3} \sqrt[3]{3 C[1] + \text{Log}[1+t^3]}\}, \{y[t] \to \sqrt[3]{3 C[1] + \text{Log}[1+t^3]}\}\}
In[5] = << EquationTrekker`
EquationTrekker[y'[t] == t^2 / (y[t] * (1 + t^3)), y[t], {t, -2, 3}]

NDSolve`Iterate::nds : At t == -0.915934, step size is effectively zero; singularity or stiff system suspected.
NDSolve`Iterate::nds : At t == -0.919283, step size is effectively zero; singularity or stiff system suspected.
NDSolve`Iterate::nds : At t == -0.996666, step size is effectively zero; singularity or stiff system suspected.

General::stop : Further output of NDSolve`Iterate::nds will be suppressed during this calculation. 

"\{y'[t] = \frac{t^2}{(1 + t^3) y[t]}, y[t], \{t, -2, 3\}\}",
"\{\}, TrekData["y[0.] = 1.""]", <>]
TrekData["y[0.] = 0.5", <>], <>]