In[935]:=
```
testEuroValues =
  Import[NotebookDirectory[] <> "NEUcurve-eurs-vlarge-random.csv"][[All, 1]];
```

In[936]:=
```
initialReward = 6.5`36
capNEU = 1500000000`36
cutoffEur = 8300000000`36
limit = 2100000000`36
cumulativeExpNEU = Function[eur, (1 - Exp[-initialReward * (eur) / capNEU]) * capNEU]
```

Out[936]= 6.50000000000000000000000000000000000

Out[937]= $1.50000000000000000000000000000000000 \times 10^{9}$

Out[938]= $8.30000000000000000000000000000000000 \times 10^{9}$

Out[939]= $2.10000000000000000000000000000000000 \times 10^{9}$

Out[940]= $\text{Function}\left[\text{eur}, \left(1 - \text{Exp}\left[-\frac{\text{initialReward}\,\text{eur}}{\text{capNEU}}\right]\right)\text{capNEU}\right]$

In[941]:=
```
cumulativeLinearNEU = Function[{eur, limit}, cumulativeExpNEU[limit] +
    (capNEU - cumulativeExpNEU[limit]) * (eur - limit) / (cutoffEur - limit)]
```

Out[941]= $\text{Function}\left[\{\text{eur, limit}\},\ \text{cumulativeExpNEU[limit]} + \frac{(\text{capNEU} - \text{cumulativeExpNEU[limit]})\ (\text{eur} - \text{limit})}{\text{cutoffEur} - \text{limit}}\right]$

In[942]:=
```
cumulativeNEU = Function[{eur, limit},
  Piecewise[{{cumulativeLinearNEU[eur, limit], eur ≥ limit  && eur <= cutoffEur},
    { cumulativeExpNEU[eur], eur < limit}, {capNEU, True}}]]
```

Out[942]=
$$\text{Function}\left[\{\text{eur, limit}\},\ \begin{cases} \text{cumulativeLinearNEU[eur, limit]} & \text{eur} \geq \text{limit} \,\&\&\, \text{eur} \leq \text{cutoffEur} \\ \text{cumulativeExpNEU[eur]} & \text{eur} < \text{limit} \\ \text{capNEU} & \text{True} \end{cases}\right]$$

In[943]:=
```
expectedNeumarksWeis =
  Function[eur, {eur, cumulativeNEU[eur, limit]}] /@ testEuroValues;
```

In[944]:=
```
Export[NotebookDirectory[] <> "NEUcurve-points-random-vlarge-weis.csv",
 expectedNeumarksWeis]
```

Out[944]= C:\projects\blockchain\btc-model\NEUcurve-points-random-vlarge-weis.csv

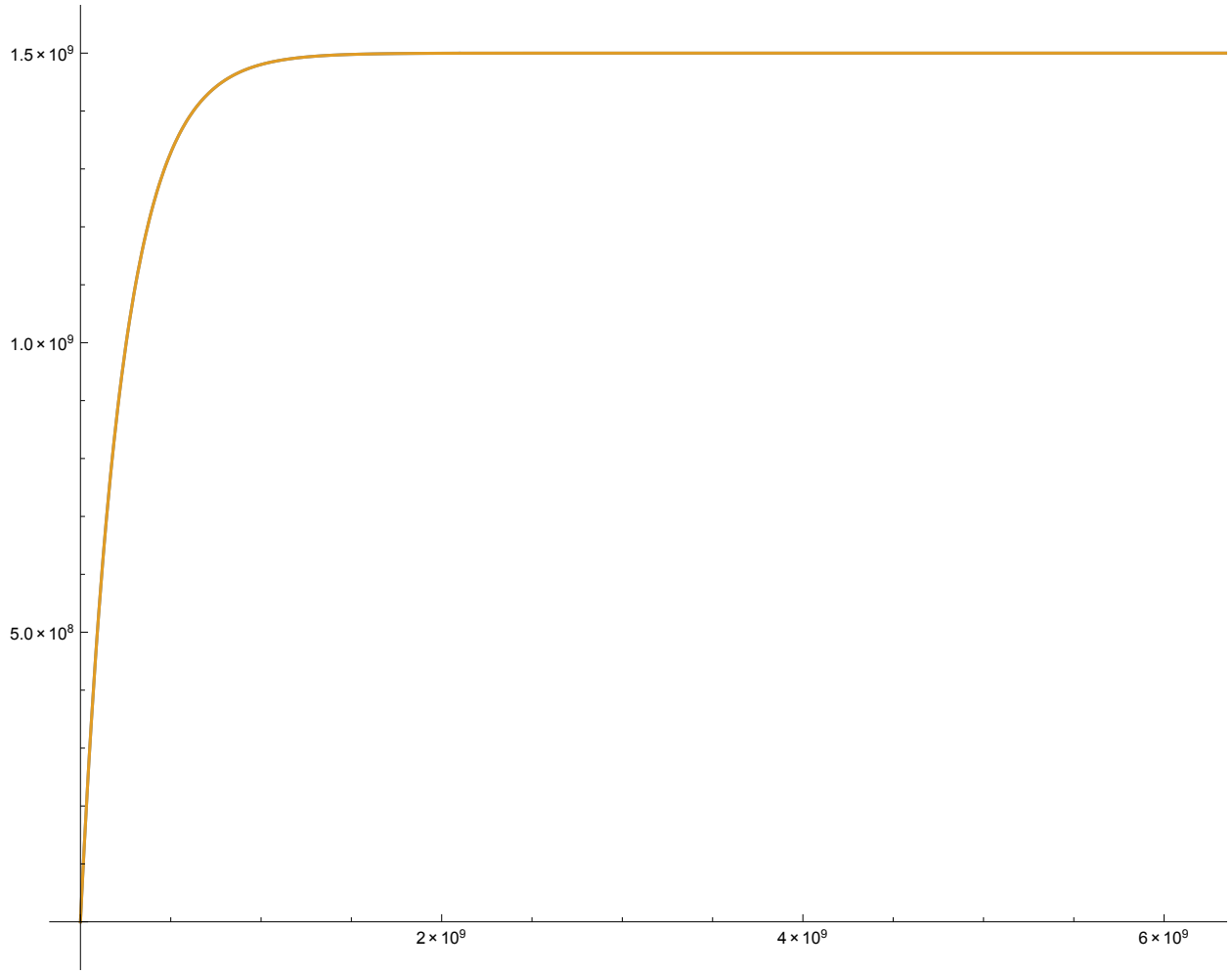
In[945]:=
```
Function[range, RandomReal[range, WorkingPrecision → 36] & /@ Range[300]] /@
  {{0.00000001`36, 10000`36}, {100000`36, 10000000`36}, {10000000`36, 600000000`36},
   {600000000`36, 2100000000`36}, {2100000000`36, 10000000000`36}};
```

In[946]:=
```
eurosRandom = Insert[Sort[ Flatten[%]], 0, 1];
```

In[947]:=
```
(*Export[NotebookDirectory[]<>"NEUcurve-eurs-vlarge-random.csv", eurosRandom]*)
```

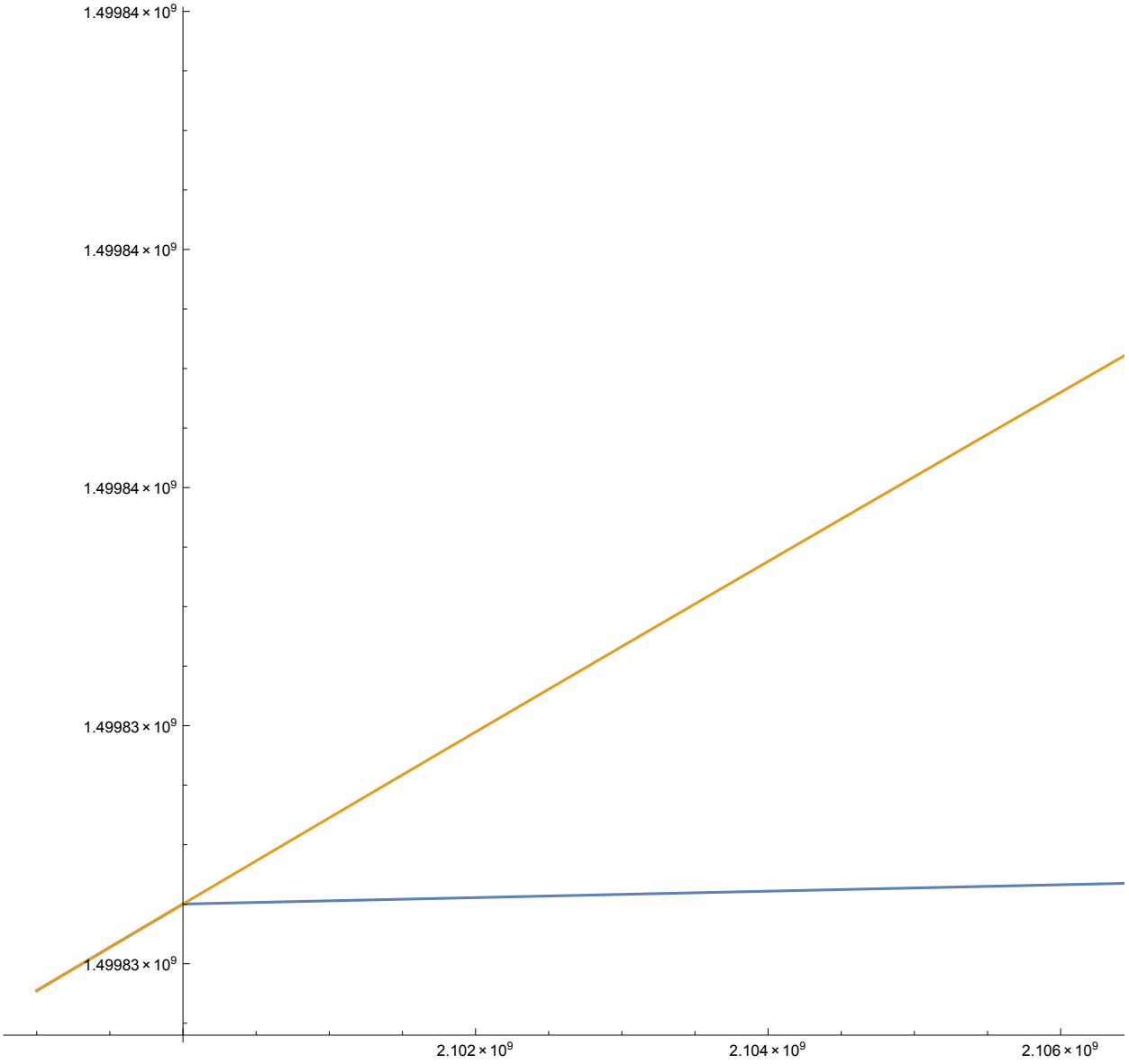
In[983]:=
```
Plot[{cumulativeNEU[x, limit], cumulativeExpNEU[x]},
 {x, 0, cutoffEur}, PlotRange → All, PlotLegends → "Expressions"]
```

Out[983]=



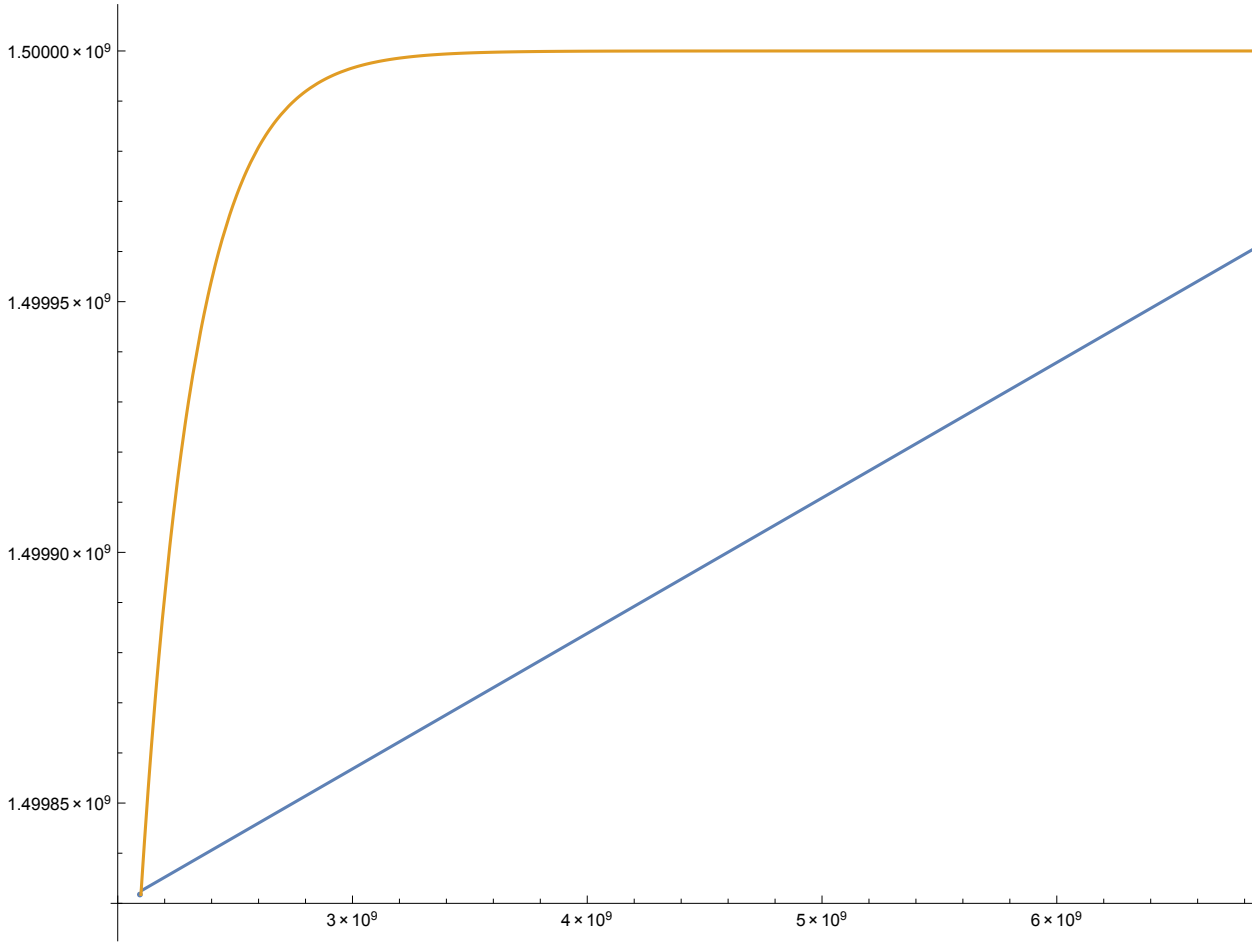
In[980]:=
```
Plot[{cumulativeNEU[x, limit], cumulativeExpNEU[x]},
 {x, limit - 1 000 000, limit + 10 000 000}, PlotLegends → "Expressions"]
```

Out[980]=



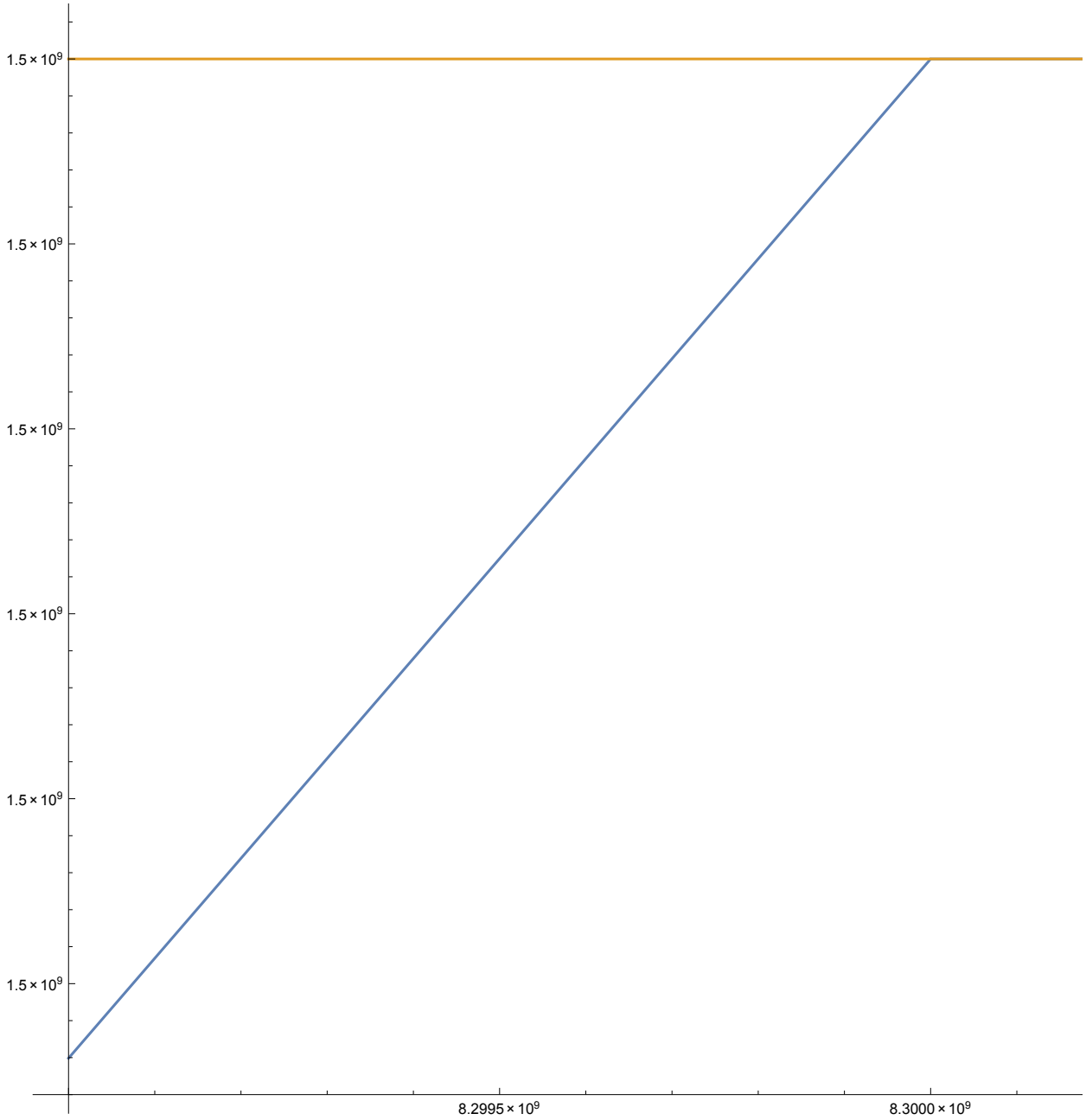
In[981]:=
```
Plot[{cumulativeNEU[x, limit], cumulativeExpNEU[x]},
 {x, limit - 1 000 000, cutoffEur}, PlotLegends → "Expressions"]
```

Out[981]=



In[984]:=
```
Plot[{cumulativeNEU[x, limit], cumulativeExpNEU[x]},
 {x, cutoffEur - 1 000 000, cutoffEur + 1 000 000}, PlotLegends → "Expressions"]
```

Out[984]=



In[948]:=
```
Reap[Sow[RandomReal[{0, 1}, WorkingPrecision → 36]]]
```

Out[948]=
```
{0.13987337469126445166328677868395616 5,
 {{0.13987337469126445166328677868395616 5}}}
```

In[949]:=
```
(*Export[NotebookDirectory[]<>"NEUcurve-eurs.csv", testEuroValues[[All,1]]]*)
```

In[950]:= **8 300 000 000 000 000 000 000 000 000 / 10^18**

Out[950]= 8 300 000 000

In[951]:= **cumulativeLinearNEU[8 299 999 999, limit]**

Out[951]= $1.499999999999972984078591101273635 46 \times 10^{9}$

In[952]:= **cumulativeExpNEU[2 099 999 999.999999]**

Out[952]= 1.49983×10^{9}

In[953]:= **cumulativeExpNEU[limit]**

Out[953]= $1.499832501287264827896539871935733 45 \times 10^{9}$

In[954]:= **cumulativeLinearNEU[cutoffEur, limit]**

Out[954]= $1.500000000000000000000000000000000000 \times 10^{9}$

In[955]:= **cumulativeLinearNEU[limit, limit]**

Out[955]= $1.499832501287264827896539871935733 45 \times 10^{9}$

In[956]:= **%% - %**

Out[956]= 167 498.712735172103460128064266 55

In[957]:= **% / (cutoffEur - limit)**

Out[957]= 0.000027015921408898726364536784559121