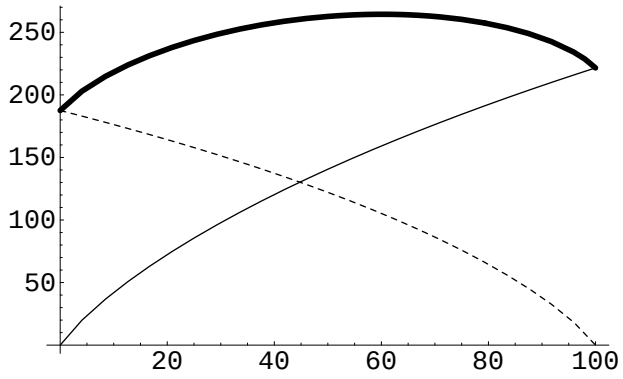
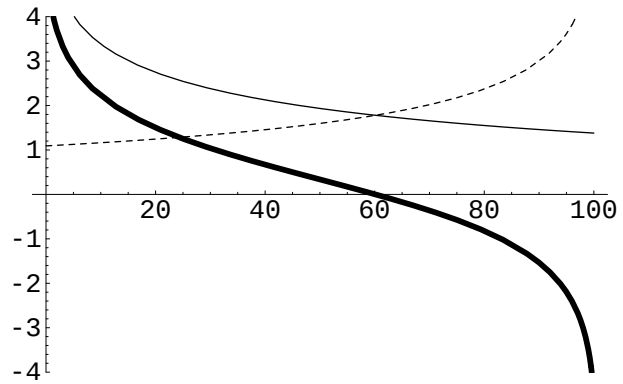
```
In[1]:= (* Two Einstein Solids *)
        (* ------------------- *)
        na = 300;
        nb = 200;
        sa[qa_] := Log[Binomial[qa + na - 1, qa]]
        sb[qa_] := Log[Binomial[100 - qa + nb - 1, 100 - qa]]
        s[qa_] := sa[qa] + sb[qa]

In[6]:= (* Entropies: S_A, S_B, S_tot *)
        (* -------------------------- *)
        Plot[{sa[x], sb[x], s[x]}, {x, 0, 100}, PlotStyle →
          {GrayLevel[0], Dashing[{0.01, 0.01}], Thickness[0.01]}]
```

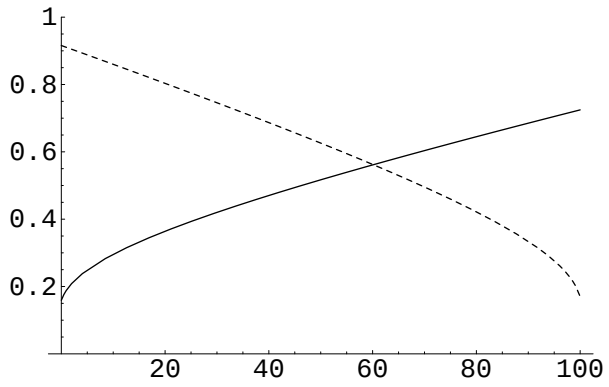



```
Out[6]= -Graphics-

In[7]:= eps = 0.1;
        sap[q_] := (sa[q + eps] - sa[q - eps]) / (2 * eps)
        sbp[q_] := (sb[q + eps] - sb[q - eps]) / (2 * eps)
        sp[q_] := (s[q + eps] - s[q - eps]) / (2 * eps)

In[11]:= (* Derivatives: dS_A/dq_A, .. *)
         (* -------------------------- *)
         Plot[{sap[x], -sbp[x], sp[x]}, {x, 0, 100}, PlotRange → {-4, 4}, PlotStyle →
           {GrayLevel[0], Dashing[{0.01, 0.01}], Thickness[0.01]}]
```




```
Out[11]= -Graphics-
```

```
In[12]:= (* Inverse of Derivatives: 1/(dS/dq), .. *)
         (* ------------------------------------ *)
         Plot[{1 / sap[x], 1 / -sbp[x]}, {x, 0, 100}, PlotRange → {0, 1}, PlotStyle →
           {GrayLevel[0], Dashing[{0.01, 0.01}], Thickness[0.01]}]
```




```
Out[12]= -Graphics-
```