In[33]:=
```
Dq = 1 / (1 - q) * Log[(1 / 3) ^q + (2 / 3) ^q] / Log[(3)];
D1 = Limit[Dq, q → 1];
D2 = Limit[Dq, q → 2];
Dneginf = Limit[Dq, q → Infinity];
Dinf = Limit[Dq, q → -Infinity];

{D1, D2}
{Dneginf, Dinf}
```

Out[38]=
$$\left\{\frac{\text{Log}\left[\frac{27}{4}\right]}{\text{Log}[27]}, \frac{\text{Log}\left[\frac{9}{5}\right]}{\text{Log}[3]}\right\}$$

Out[39]=
$$\left\{\frac{\text{Log}\left[\frac{3}{2}\right]}{\text{Log}[3]}, 1\right\}$$