Q4.

Solving the summation (a=|α|):

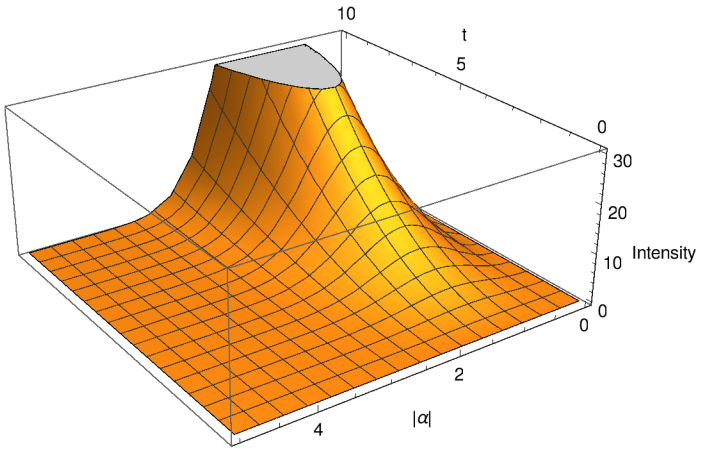
In[1]:=
```
Sum[a^(2 n)/(n!)^2 n, {n, 1, ∞}]
```

Out[1]=
```
a BesselI[1, 2 a]
```

c) Taking $\frac{|G|^2}{\hbar^2} = 1$

In[34]:=
```
Plot3D[t^2 a BesselI[1, 2 a] Exp[-a^2], {t, 0, 10},
 {a, 0, 5}, AxesLabel → {"t", "|α|", "Intensity"}]
```

Out[34]=



For |α|>4 or |α|<0.01 we have the number of particles in the excited state to neglegably small. Additionally, if you increase |α|, we get the intensity approaching zero. Hence Rabi oscillations will be too small to see,