```
In[99]:= pts = {{0.0, 0.8810487}, {0.5, 0.52062547}, {1.0, 0.32412635}, {2.0, 0.15319098}}
  (*these are the points I found in python in the format {redshift, growth}*)
Out[99]=
{{0., 0.881049}, {0.5, 0.520625}, {1., 0.324126}, {2., 0.153191}}

In[103]:=
(*use NDSolve to solve our diffeq in terms of u =
 ln(a). also there was a sign error in the equation in the pset!!*)

In[104]:=
```

$$s = \text{NDSolve}\left[\left\{g''[u] + \left(\frac{5}{2} + \frac{3}{2}\,\Omega\text{DE}\right) g'[u] + 3\,\Omega\text{DE}\,g[u] == 0 \;/.\; \Omega\text{DE} \to \frac{1}{1 + \left(\frac{\text{Exp}[u]}{\text{a}\Lambda\text{m}}\right)^{-3}} \;/.\; \text{a}\Lambda\text{m} \to 0.77,\right.\right.$$
$$\left.\left. g[-5] == 1,\; g'[-5] == 0\right\},\; g,\; \{u, -5, 0\}\right]$$

```
Out[104]=
{{g → InterpolatingFunction[ Domain: {{-5., 0.}} Output: scalar ]}}

In[105]:=
(g /. s[[1]])[-0.001]
(*check the growth value close to zero and make sure we get close to 0.78!*)
Out[105]=
0.787285

In[107]:=
(*plot the growth function along with the four points
  we calculated from the data in python - it's not a bad fit*)

In[110]:=
Module[{a, u}, Show[Plot[(a = 1 / (1 + z);
     u = Log[a];
     a g[u]) /. s[[1]], {z, 0, 2}, PlotRange → {{0, 2}, {0, 1}},
   Frame → True, FrameLabel → {"z", "D(a)"}], ListPlot[pts]]]
Out[110]=
```