Exercise Basic 8.1-1

Exponential Growth

The output of the solar cell industry in **2006 - 2008** grew by **40 %** per year. Let's assume that all solar cells installed in **2007** produced a total energy of **0.1 GW /year**.

Calculate (and plot) the installed power as a function of time up to **2050** for growth rates of **20 %**, **30 %**, **40 %**, and **50 %**

- What is the proper equation?
- What follows from the results with respect to the world-wide power scenario as described in the link??
- Plot the demand for **Si**, assuming that a standard (**1000 x 1000 x 0.1**) **mm^3 Si** solar cell generates **10 W** on average. Will there be enough **Si**? How do the amounts of **Si** needed compare to other essential raw materials?

Solution