Time of Hirsh Virus Propogation

Fields

```
r0 = 10 (*Base reproduction number*)
t = 30 (*Reproductive Period*)
```

Out[1]= 10

Out[2]= 30

Poplulation Estimates

In[5]:= ▤ **population of earth** ▬
↳ Result

Input interpretation:

```
Entity["Country", "World"]["Population"]
```

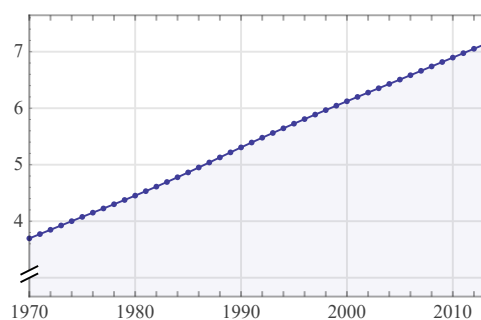| world | population |

Result:

➡ 7.13 billion people (2013 estimate)
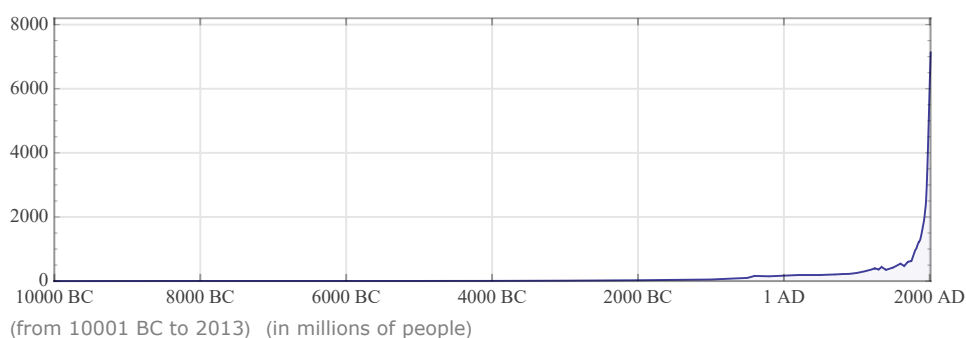
Recent population history: Show projections   Log scale

(from 1970 to 2013)
(in billions of people)

Long–term population history: Show projections   Log scale

(from 10001 BC to 2013) (in millions of people)

Comparison:

$\approx$ ($0.067 \approx 1/15$) $\times$

estimated total number of Homo sapiens to have ever lived (≈ 110 billion people)

Out[5]= 7.13 billion people (2013 estimate)

In[6]:= **population = Out[5]**

Out[6]= 7.13 billion people (2013 estimate)

In[7]:= **10^t = population**

Set::write : Tag Power in 10^{30} is Protected. ≫

Out[7]= 7.13 billion people (2013 estimate)

In[8]:= **10^(n * t) = population**

Set::write : Tag Power in $10^{30\,n}$ is Protected. ≫

Out[8]= 7.13 billion people (2013 estimate)

In[9]:= **Log[population]**

Out[9]= Log [7.13 billion people (2013 estimate)]

Final Calculations

In[10]:= **log(7.13 billion)** »

Log[7 130 000 000]

Out[10]= Log [7 130 000 000]

In[11]:= **N[Log[7 130 000 000]]**

Out[11]= 22.6876

In[12]:= **n = Out[11]**

Out[12]= 22.6876

In[13]:= **propogationTime = n * t**

Out[13]= 680.627

In[14]:= **number of years in 680.627 days** »

Result

1.86473 yr

In[15]:= **1.86473`yr (*Total Time of Virus Propogation*)**

681 (*Total Time of Virus Propogation in Days*)

Out[15]= 1.86473 yr

Out[16]= 681