The running time of PrimalityTest

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(* The formulas for the running time derived in class *)
```

In[74]:=
```
size = 31;
N[Floor[√(2^size - 1)] - 1]
```

Out[75]= 46 339.

In[77]:=
```
N[Ceiling[2^(size/2)] - 2]
```

Out[77]= 46 339.

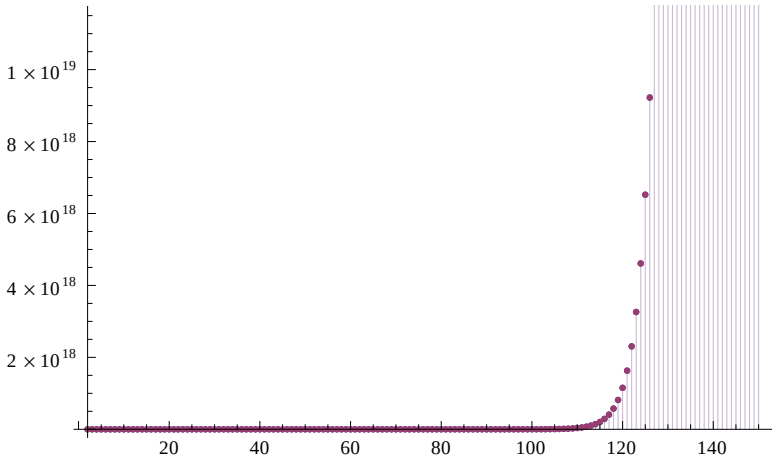
```
(* Below is a computation of the running time in years of PrimalityTest
 program posted on the class website on 1 terraFLOPS supercomputer,
assumming the body of the loop consists of 1 floatin-point instruction *)

size = 150;
n = N[Ceiling[2^(size/2)] - 2] (* formula we derived *);
N[(n / (60(*secs*) × 60(*mins*) × 24(*hrs*) × 365(*days*))) × 10^-15
 (* 1 petaFLOPS*)]
```

Out[110]= 1.19796

In[73]:=
```
DiscretePlot[{Floor[√(2^m - 1)], Ceiling[2^(m/2)] - 2}, {m, 2, 150}]
```

Out[73]=




```
(* Below are auxiliary checks *)
```

```
Limit[1/2^(m/2) (Ceiling[2^(m/2)] - 2), m → ∞]
```

1

```
Limit[1/2^(m/2) (Floor[Sqrt[2^m - 1]] - 1), m → ∞]
```

```
1
```

```
DiscretePlot[Floor[Sqrt[2^m - 1]] - 1 - (Ceiling[2^(m/2)] - 2), {m, 2, 439}]
```