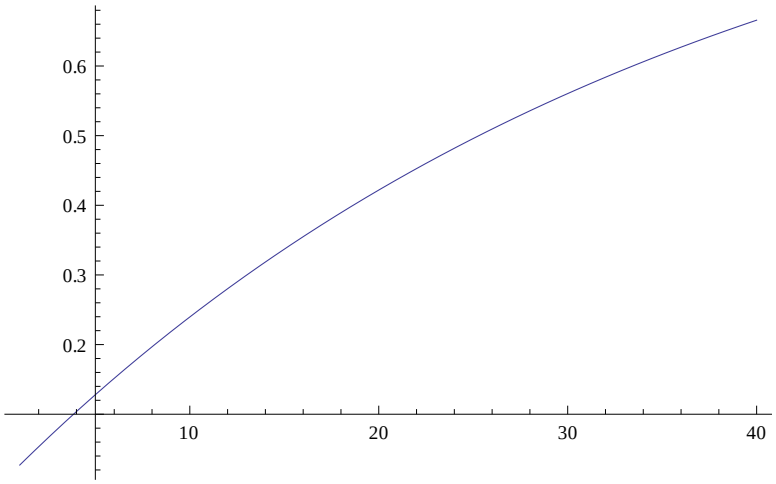
```
p[n_] := (36 / 37)^(n - 1) / 37

Sum[p[n], {n, 1, k}]
```

$$1 - \left(\frac{36}{37}\right)^{k}$$

```
1 - (36/37)^36 // N
```

```
0.627069
```

```
Plot[1 - (36/37)^k, {k, 1, 40}, PlotRange → All]
```




```
a = Sum[p[n] * n, {n, 1, k}]
```

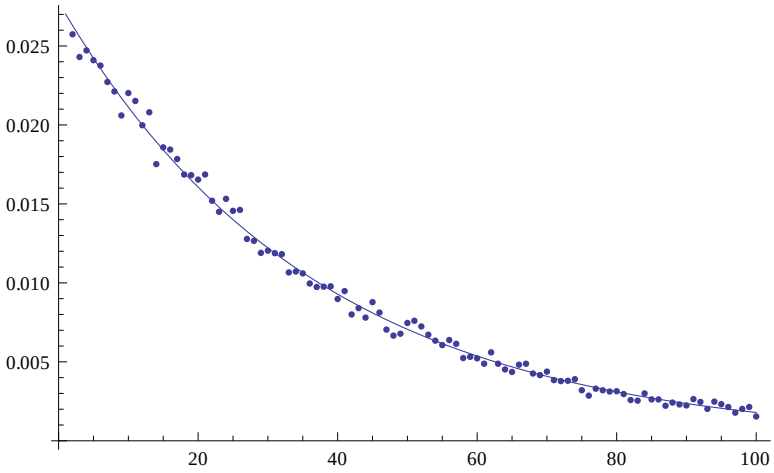
$$37 - 36^{k}\ 37^{1-k} - \left(\frac{36}{37}\right)^{k}\ k$$

```
Limit[a, {k -> Infinity}]
```

```
{37}
```

```
h = Table[0, {i, 0, 10000}]; nn = 50000; r = RandomInteger[36, 2 * nn]; kk = 1;
For[i = 0, i < nn, i++,
 n = 1;
If[kk > nn, kk = 1; r = RandomInteger[36, 2 * nn]];
 While[r[[kk++]] < 36, n++];
 h[[n]] += 1 / nn;
]
```

```
Show[Plot[p[n], {n, 1, 100}], ListPlot[h[[1 ;; 100]]]]
```




```
RandomInteger[36]
```

33