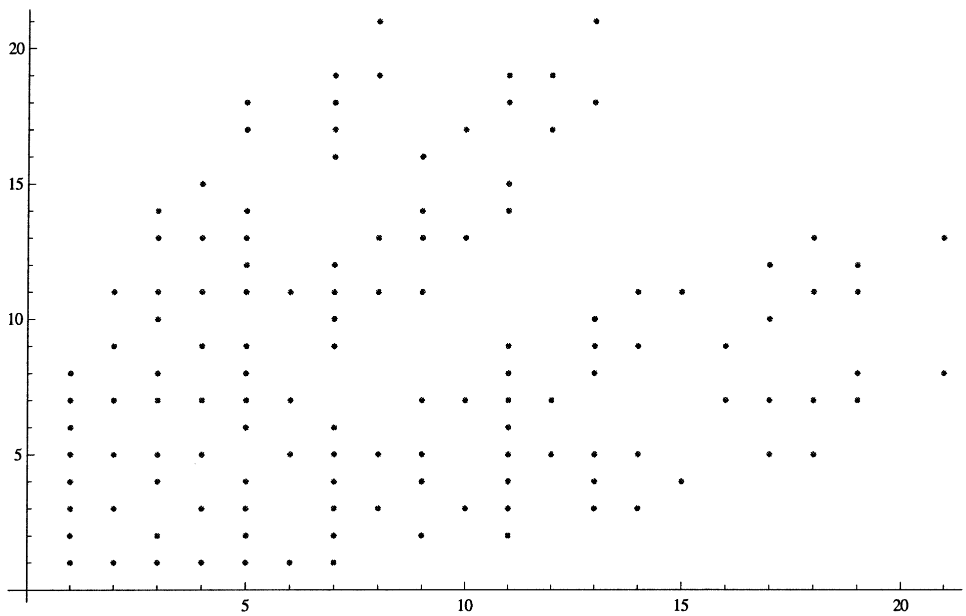
```
s[0] = 0; s[1] = 1; s[n_?EvenQ] := s[n] = s[n/2];
s[n_?OddQ] := s[n] = s[(n+1)/2] + s[(n-1)/2]
```

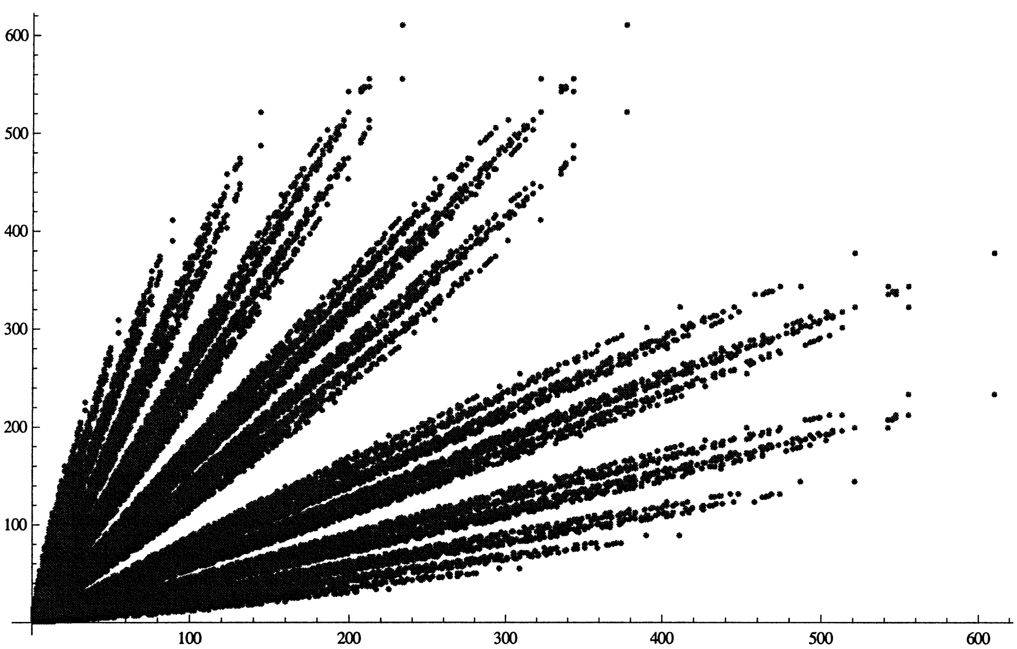
Sitting at the origin, we'd be able to see all trees at these points.

```
ListPlot[Table[{s[n], s[n+1]}, {n, 1, 2^7}]]
```



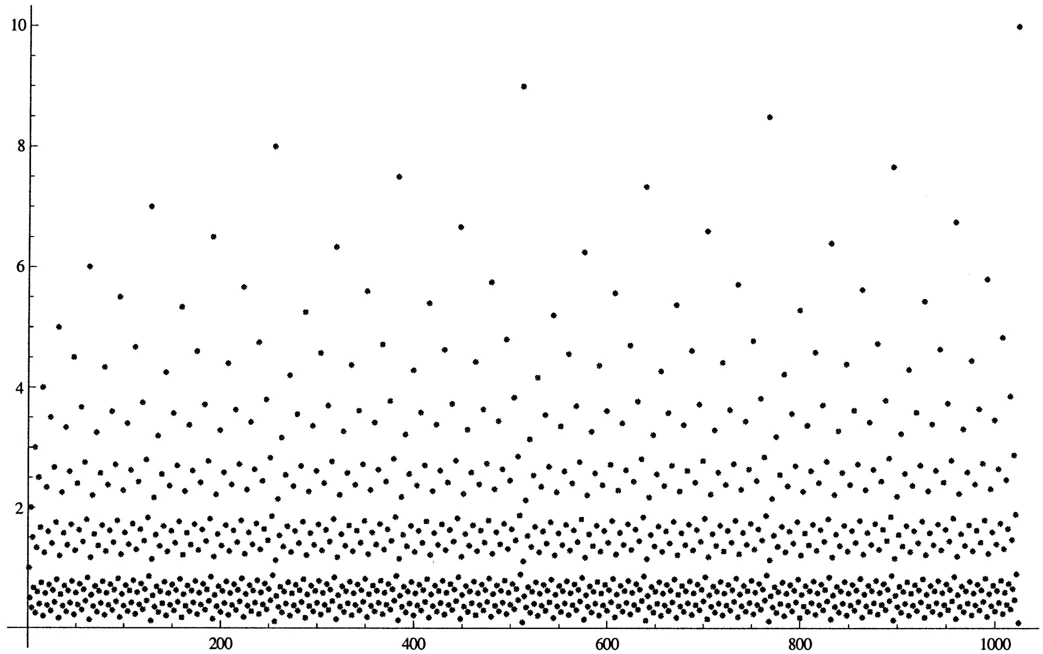
What happens here is that this gives (a,b), where the sum of the denominators in the continued fraction of a/b is at most 14. If a and b are close and large, this won't happen.

```
ListPlot[Table[{s[n], s[n+1]}, {n, 1, 2^14}]]
```



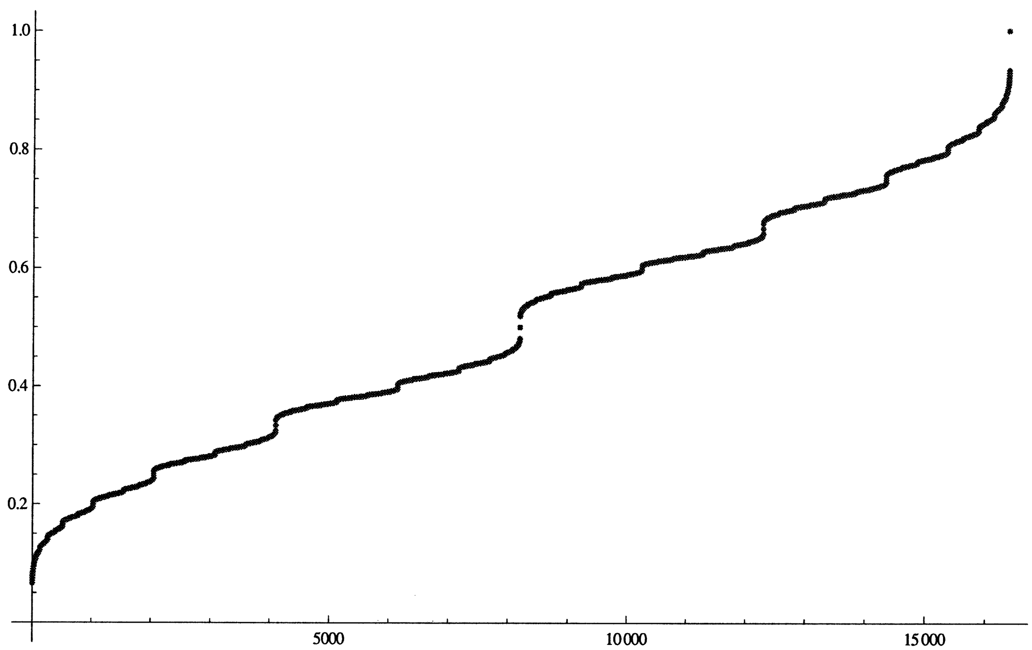
No obvious pattern here; they're pretty well spread out. Increasing the exponent is very interesting.

```
ListPlot[Table[s[n] / s[n + 1], {n, 1, 2 ^ 10}], PlotRange → All]
```



Essentially, this is the inverse function to the Minkowski ?-function.

```
ListPlot[Table[s[n] / s[2 ^ 14 + n], {n, 1, 2 ^ 14}],
  PlotRange → All]
```



Examples put in, especially if you're unfamiliar with *Mathematica*.

```
ContinuedFraction[595 / 327]
```

```
{1, 1, 4, 1, 1, 5, 2, 2}
```

```
FromContinuedFraction[{1, 1, 4, 1, 1, 5, 2, 2}]
```

$$\frac{595}{327}$$

That's 8 denominators, so the final "2" is replaced by "2-1,1".

```
FromContinuedFraction[{1, 1, 4, 1, 1, 5, 2, 1, 1}]
```

$$\frac{595}{327}$$

Now I take these as a prescription of the number of 1s' and 0s,' working back to front. This is the *Mathematica* command which does this. The sum of the denominators is 17 and $2^{17} = 131072$.

```
FromDigits[{1, 0, 1, 1, 0, 0, 0, 0, 0, 1, 0, 1, 1, 1, 1, 0, 1}, 2]
```

```
90301
```

It's always reassuring to see your theorem verified.

```
s[90301]
```

```
595
```

```
s[90302]
```

```
327
```

Checking what happens by working front to back

```
FromDigits[{1, 0, 1, 1, 1, 1, 0, 1, 0, 0, 0, 0, 0, 1, 1, 0, 1}, 2]
```

```
96781
```

```
s[96781]
```

```
595
```

```
s[96782]
```

```
353
```

Extra check of an unproved assertion.

```
Mod[327 * 353, 595]
```

```
1
```