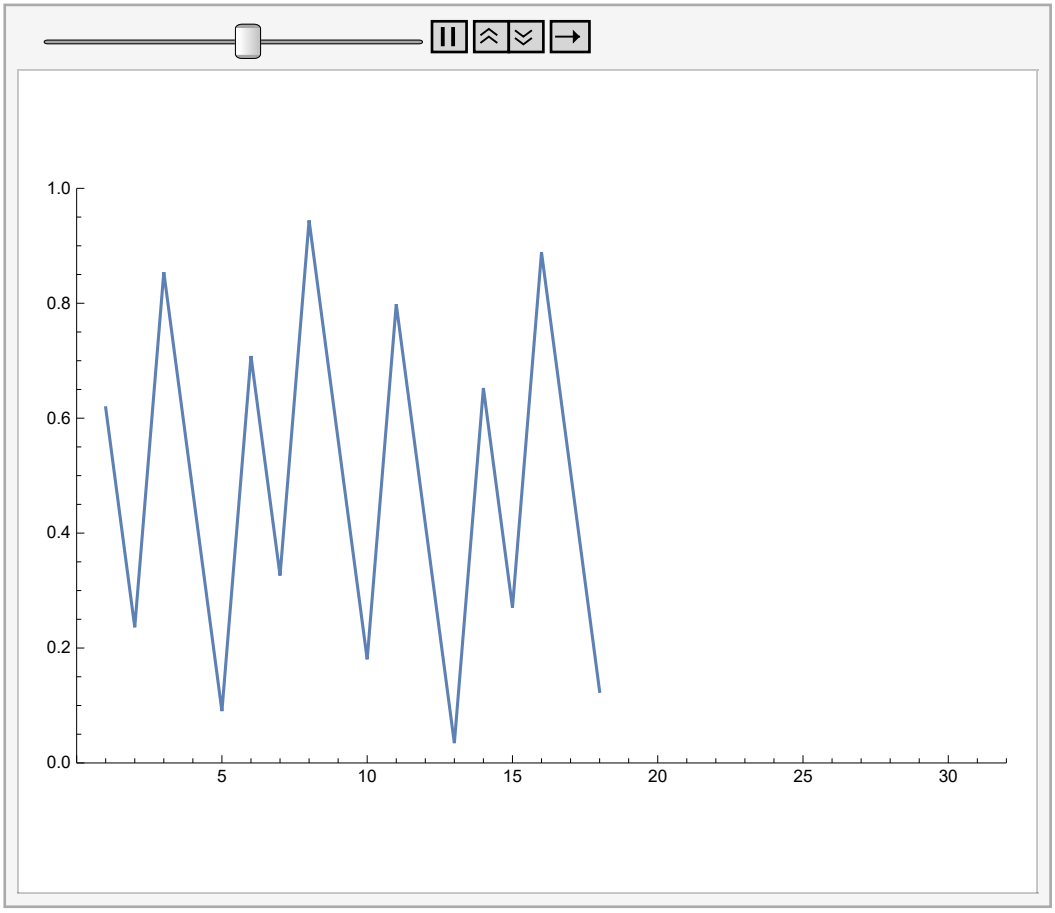
In[1]:=
```
SetDirectory@NotebookDirectory[];
```

In[2]:=
```
ListAnimate[ListLinePlot[FractionalPart[GoldenRatio * #1] & /@ Range[#1],
    PlotRange → {{0, 32}, {0, 1}}, ImageSize → {500, 400}] & /@ Range[32]]
```

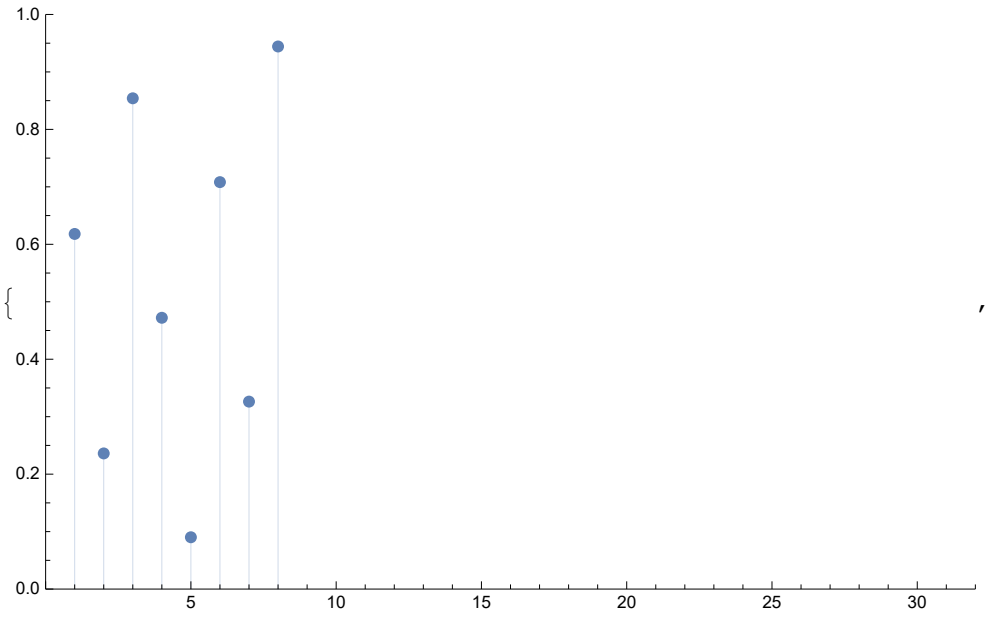
Out[2]=

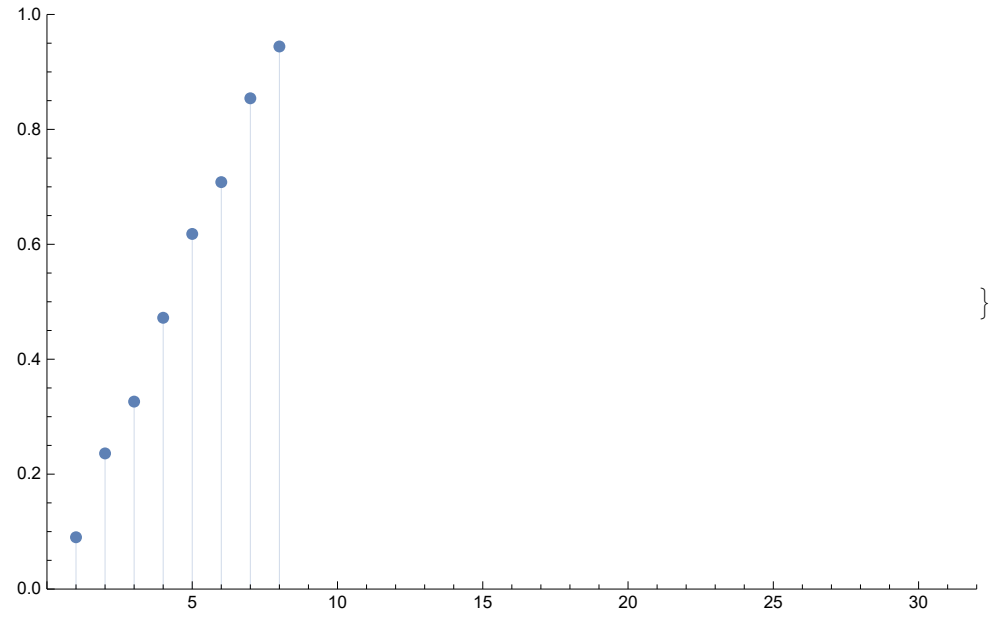


In[3]:=
```
Export["golden_sequence_lines.gif",
  ListLinePlot[FractionalPart[GoldenRatio * #1] & /@ Range[#1],
     PlotRange → {{0, 32}, {0, 1}}, ImageSize → {500, 400}] & /@
   Range[32], "DisplayDurations" → 0.7];
```

In[4]:=
```
ListAnimate[
 {ListPlot[N[FractionalPart[GoldenRatio * #1] & /@ Range[#1]], Filling → Axis,
     PlotRange → {{0, 32}, {0, 1}}, ImageSize → {500, 400}],
    ListPlot[Sort[N[FractionalPart[GoldenRatio * #1] & /@ Range[#1]]], Filling → Axis,
     PlotRange → {{0, 32}, {0, 1}}, ImageSize → {500, 400}]} & /@ Range[32]]
Export["golden_sequence_comparison.gif",
  {ListPlot[N[FractionalPart[GoldenRatio * #1] & /@ Range[#1]],
     Filling → Axis, PlotRange → {{0, 32}, {0, 1}}, ImageSize → {500, 400}],
    ListPlot[Sort[N[FractionalPart[GoldenRatio * #1] & /@ Range[#1]]],
     Filling → Axis, PlotRange → {{0, 32}, {0, 1}}, ImageSize → {500, 400}]} & /@
   Range[32], "DisplayDurations" → 0.7];
```

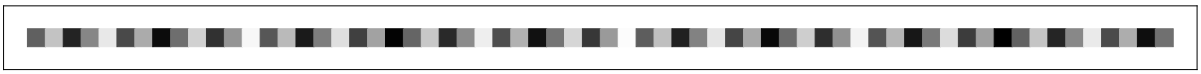
Out[4]=





In[6]:=
```
ArrayPlot[{FractionalPart[GoldenRatio * #1] & /@ Range[64]}]
```

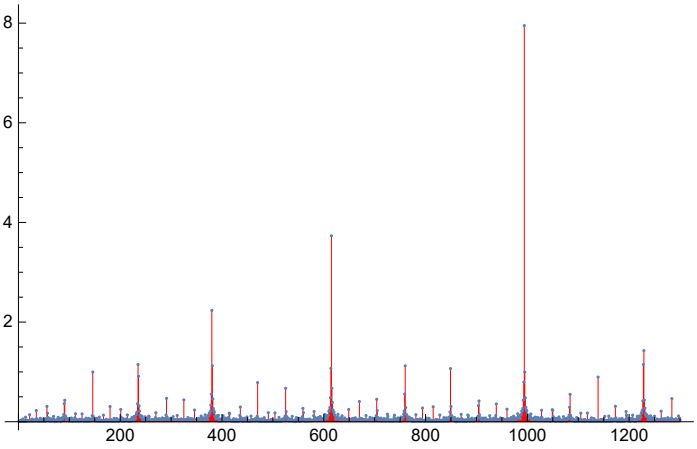
Out[6]=



In[7]:=
```
MyPeriodogram[x_, col_: Black, range_: All] :=
 ListPlot[Abs@Fourier[x][[ ;; Ceiling[Dimensions[x][[1]] / 2]]],
  PlotRange → range, Filling → Axis, FillingStyle → {Thickness[0.05], col}]
```

In[8]:=
```
MyPeriodogram[FractionalPart[GoldenRatio * #1] & /@ Range[2600] - 0.5, Red]
```

Out[8]=



In[9]:=
```
N[Abs[FractionalPart[GoldenRatio * (#1 + 1)] - FractionalPart[GoldenRatio * #1]]] & /@
 Range[8]
```

Out[9]=
```
{0.381966, 0.618034, 0.381966, 0.381966, 0.618034, 0.381966, 0.618034, 0.381966}
```