zu 2.11 Veranschaulichung und Grenzwerte von Folgen

Zunächst die Befehlssyntax:

In[1]:=
```
?DiscretePlot
```

DiscretePlot[$expr$, {n, n_{max}}] generates a plot of the values of $expr$ when n runs from 1 to n_{max}.
DiscretePlot[$expr$, {n, n_{min}, n_{max}}] generates a plot of the values of $expr$ when n runs from n_{min} to n_{max}.
DiscretePlot[$expr$, {n, n_{min}, n_{max}, dn}] uses steps dn.
DiscretePlot[$expr$, {n, {n_1, n_2, …}}] uses the successive values n_1, n_2, ….
DiscretePlot[{$expr_1$, $expr_2$, …}, …] plots the values of all the $expr_i$. ≫

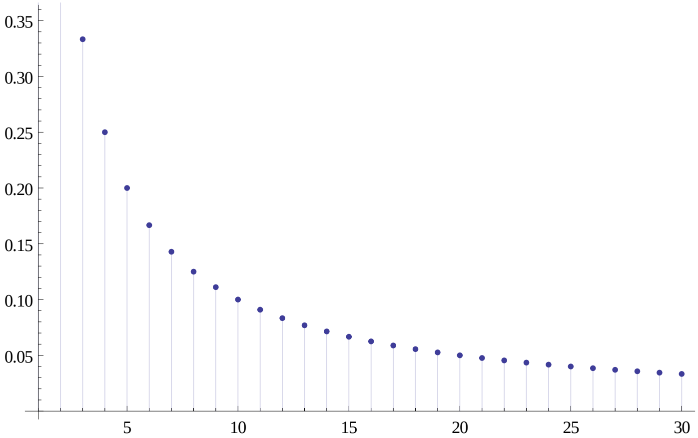
In[2]:=
```
? Limit
```

Limit[$expr$, x -> x_0] finds the limiting value of $expr$ when x approaches x_0. ≫

Die Folgen aus 2.11 (ii) - (v)

In[4]:=
```
DiscretePlot[1 / n, {n, 1, 30}]
```

Out[4]=

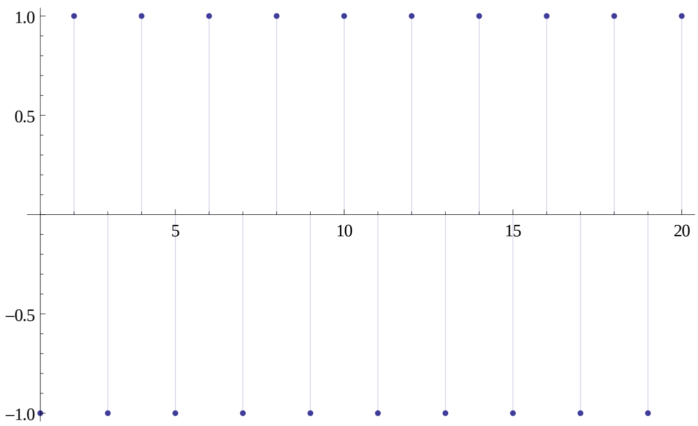


In[5]:=
```
Limit[1 / n, n → Infinity]
```

Out[5]= 0

In[6]:=
```
DiscretePlot[(-1) ^n, {n, 1, 20}]
Limit[(-1) ^n, n → Infinity]
```

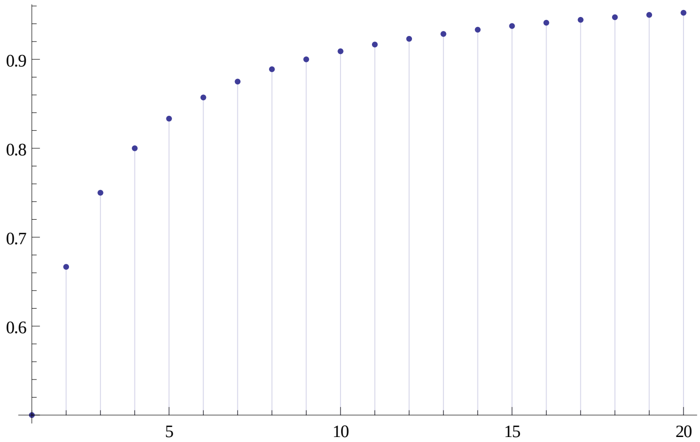
Out[6]=



Out[7]= $e^{2\, i\, \text{Interval}[\{0, \pi\}]}$

In[8]:=
```
a[n_] := n / (n + 1)
DiscretePlot[a[n], {n, 1, 20}]
Limit[a[n], n → Infinity]
```

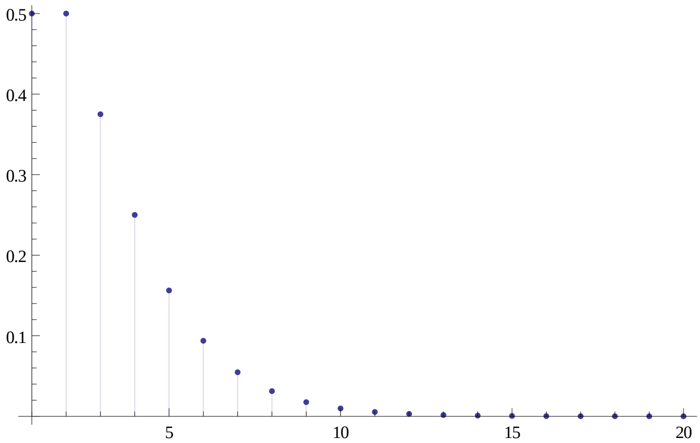
Out[9]=



Out[10]= 1

In[11]:=
```
b[n_] := n / 2^n
DiscretePlot[b[n], {n, 1, 20}]
Limit[a[b], n → Infinity]
```

Out[12]=



Out[13]= $\frac{b}{1+b}$