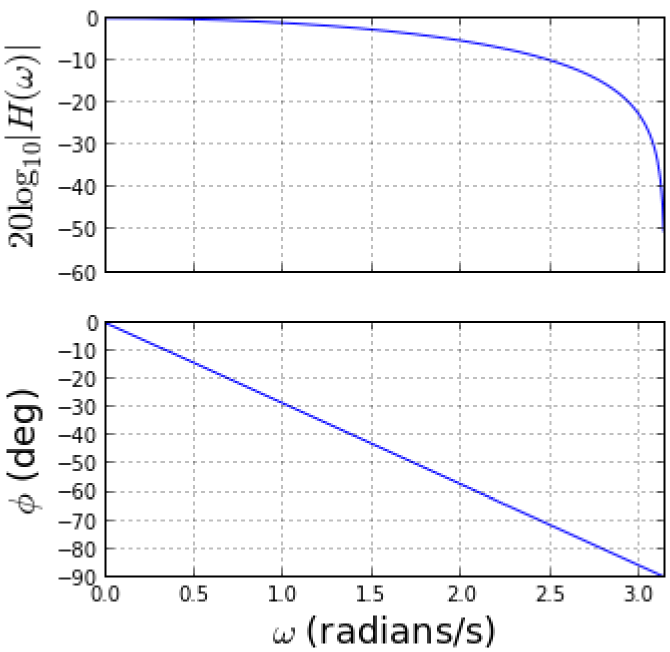
```
ax=axs[0]
w,h=signal.freqz([1/2., 1/2.],1) # Compute impulse response
ax.plot(w,20*log10(abs(h)))
ax.set_ylabel(r"$20 \log_{10} |H(\omega)| $",fontsize=18)
ax.grid()

ax=axs[1]
ax.plot(w,angle(h)/pi*180)
ax.set_xlabel(r'$\omega$ (radians/s)',fontsize=18)
ax.set_ylabel(r"$\phi $ (deg)",fontsize=18)
ax.set_xlim(xmax = pi)
ax.grid()

# fig.savefig('figure_00@.png', bbox_inches='tight', dpi=300)
```



In the figure above, the top plot shows the amplitude response of the filter (in dB) and the bottom plot shows the phase response in degrees. At $\omega = 0$, we have $|H(\omega = 0)| = 1$ (i.e unity-gain) which says that our moving average filter does not change the amplitude of signals at $\omega = 0$. We observed this earlier with $x_n = 1$ that produced $y_n = 1$. When we consider the other extreme

with $\omega = \pi$, we have $|H(\omega = \pi)| = 0$ which we observed earlier for $x_n = \exp(j\pi n)\ \forall\ n \geq 0$. Thus, signals at $\omega = \pi$ are completely zero-ed out by the filter.

Now, let's consider a signal halfway between this two extremes:

$$x_n = \exp(j\pi n/2)\ \forall\ n \geq 0$$