Q1. The transfer function (in s-domain) of a filter is

$$H(s) = \frac{\sqrt{5}s}{s^2+2s+2}.$$

Total 10 points

(a) Find its poles and zeros. (5 points)

(b) Find the magnitude $|H(\Omega)|$. (5 points)

Hint: ① set $s = j\Omega$

② For complex numbers z_1 and z_2 if $z = \frac{z_1}{z_2}$

$$|z| = \frac{|z_1|}{|z_2|}$$

and $|a+ib| = \sqrt{a^2+b^2}$

Set $\Omega = 0, 1, \infty$ to find $|H(0)|$, $|H(1)|$