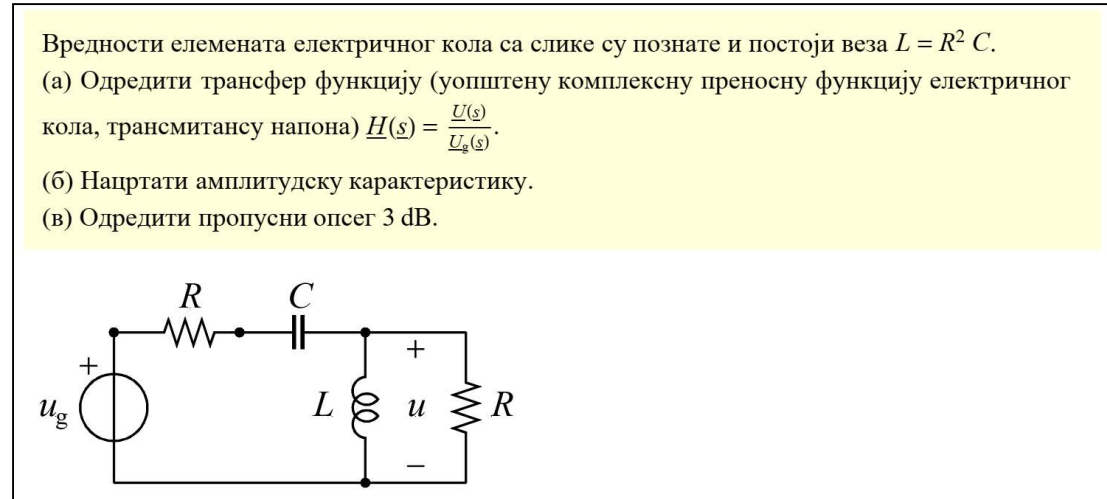


Филтар пропусник

високих учестаности

Figure 1: Highpass filter



```
(%i3) j: %i; ZL: s*L; ZC: 1/(s*C);
```

```
(%o1) %i
```

```
(%o2) L s
```

```
(%o3) 1
      C s
```

```
(%i4) Z1: R+ZC;
```

```
(%o4) 1
      C s + R
```

```
(%i5) Z2: 1/(1/R+1/ZL);
```

```
(%o5) 1
      1 1
      L s + R
```

```
(%i6) zamena: [L=R^2*C];
```

```
(%o6) [L=C R^2]
```

```
(%i7) Hs: Z2/(Z1+Z2), zamena, ratsimp;
```

```
(%o7) C^2 R^2 s^2
      2 C^2 R^2 s^2 + 2 C R s + 1
```

```
(%i8) Hw: Hs, s=j*w;
```

```
(%o8) - C^2 R^2 w^2
      - 2 C^2 R^2 w^2 + 2 %i C R w + 1
```

```
(%i9) M: cabs(Hw), ratsimp;
```

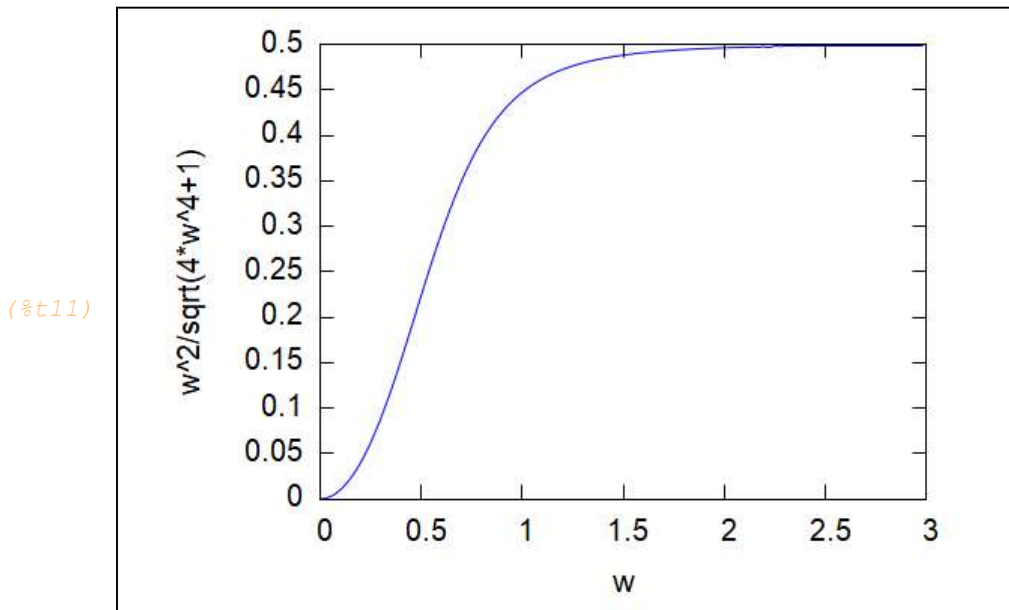
```
(%o9) 
$$\frac{C^2 R^2 w^2}{\sqrt{4 C^4 R^4 w^4 + 1}}$$

```

```
(%i10) vrednosti: [R=1, C=1];
```

```
(%o10) [R=1, C=1]
```

```
(%i11) wxplot2d(ev(M, vrednosti), [w, 0, 3]);
```



```
(%o11)
```

```
(%i12) Aref: limit(M, w, inf) ;
```

```
(%o12) 
$$\frac{1}{2}$$

```

```
(%i13) w3dB: solve(M^2=Aref^2/2, w);
```

```
(%o13) 
$$\left[ w = \frac{i}{\sqrt{2} C R}, w = -\frac{1}{\sqrt{2} C R}, w = -\frac{i}{\sqrt{2} C R}, w = \frac{1}{\sqrt{2} C R} \right]$$

```

```
(%i14) wg: w, w3dB[4];
```

```
(%o14) 
$$\frac{1}{\sqrt{2} C R}$$

```

```
(%i15) B3dB: [wg, inf];
```

```
(%o15) 
$$\left[ \frac{1}{\sqrt{2} C R}, \text{inf} \right]$$

```