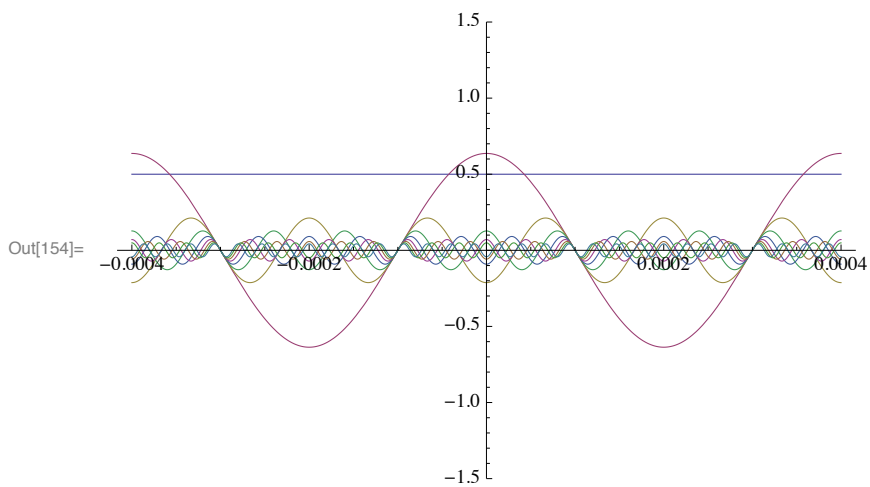


```

In[144]:= clear[n];
clear[a];
Clear["Global`*"]
tau = 200 * 10-6;
T = 2 * tau;
omega0 = 2 * Pi / T;
Nterm = 100
a0 = tau / T;
a[n_] := (2 / Pi) * (1 / n) * Sin[n * omega0 * tau / 2];
s[t_] := a0 + Sum[a[k] * Cos[k * omega0 * t], {k, 1, Nterm}];
Plot[{a0, a[1] Cos[omega0 * t], a[3] Cos[3 * omega0 * t], a[5] Cos[5 * omega0 * t],
      a[7] Cos[7 * omega0 * t], a[9] Cos[9 * omega0 * t], a[11] Cos[11 * omega0 * t],
      a[13] Cos[13 * omega0 * t], a[15] Cos[15 * omega0 * t]},
      {t, -T, T}, PlotRange -> {-1.5, 1.5}]

```

Out[150]= 100



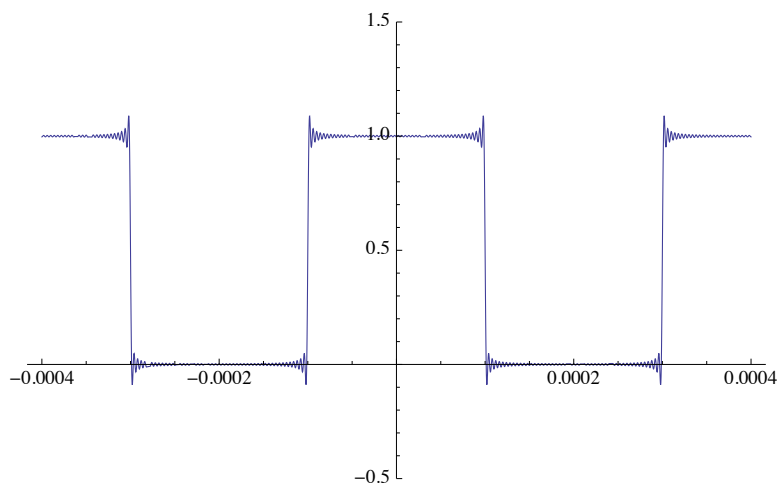
In[155]:=

```

Plot[s[t], {t, -T, T}, PlotRange -> {-0.5, 1.5}]

```

Out[155]=

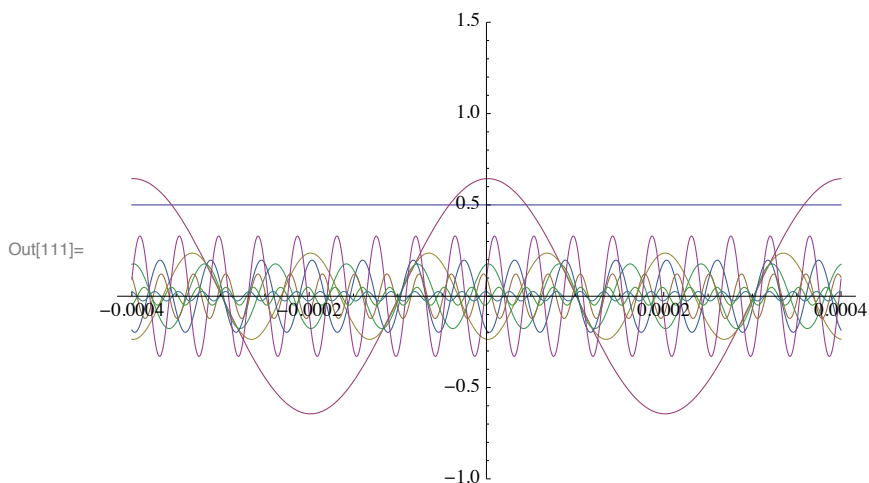
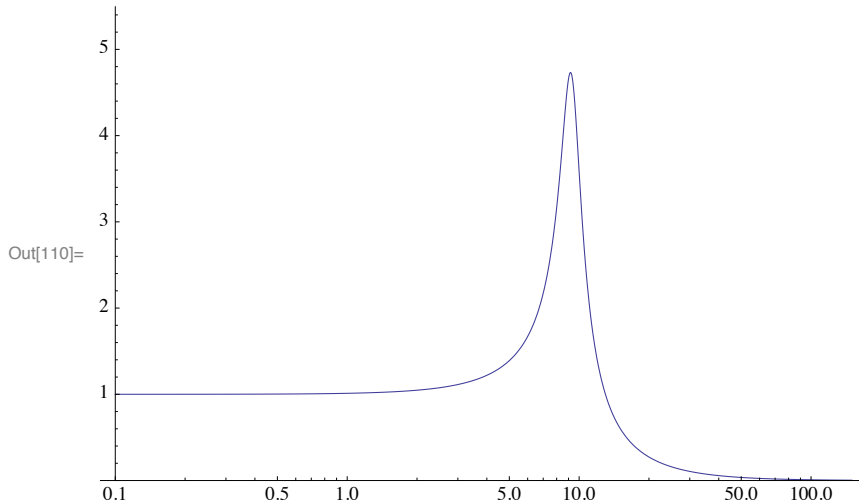


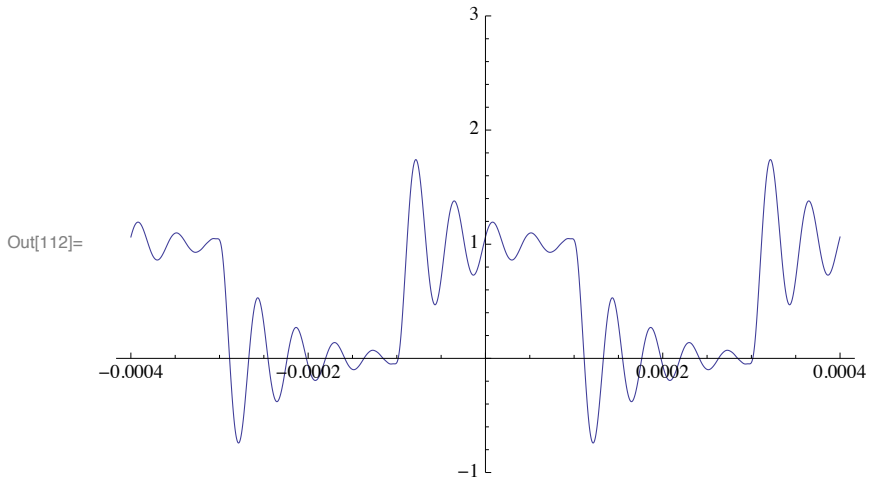
```

In[104]:= res = 310;
Lind = 0.01;
cap = 4.7 × 10-9;
cap2 = 47 × 10-9;

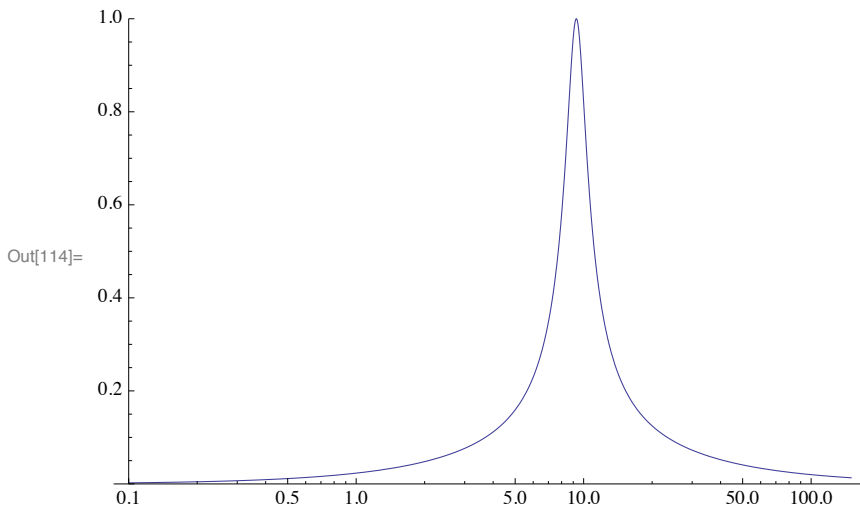
HC[k_] := 1 / (i * k * omega0 * cap * res - (k * omega0)2 * Lind * cap + 1);
Sout[t_] := a0 * Abs[HC[0]] +
  Sum[Abs[HC[k]] * a[k] * Cos[k * 2 * Pi * t / T + Arg[HC[k]]], {k, 1, Nterm}];
LogLinearPlot[Abs[HC[k]], {k, 0.1, 150}, PlotRange -> {0, 5.5}]
Plot[{Abs[HC[0]] * a0, Abs[HC[1]] * a[1] Cos[omega0 * t + Arg[HC[1]]],
  Abs[HC[3]] * a[3] * Cos[3 * omega0 * t + Arg[HC[3]]],
  Abs[HC[5]] * a[5] * Cos[5 * omega0 * t + Arg[HC[5]]],
  Abs[HC[7]] * a[7] * Cos[7 * omega0 * t + Arg[HC[7]]],
  Abs[HC[9]] * a[9] * Cos[9 * omega0 * t + Arg[HC[9]]],
  Abs[HC[11]] * a[11] * Cos[11 * omega0 * t + Arg[HC[11]]],
  Abs[HC[13]] * a[13] * Cos[13 * omega0 * t + Arg[HC[13]]],
  Abs[HC[15]] * a[15] * Cos[15 * omega0 * t + Arg[HC[15]]]},
{t, -T, T}, PlotRange -> {-1., 1.5}]
Plot[Sout[t], {t, -T, T}, PlotRange -> {-1, 3.}]

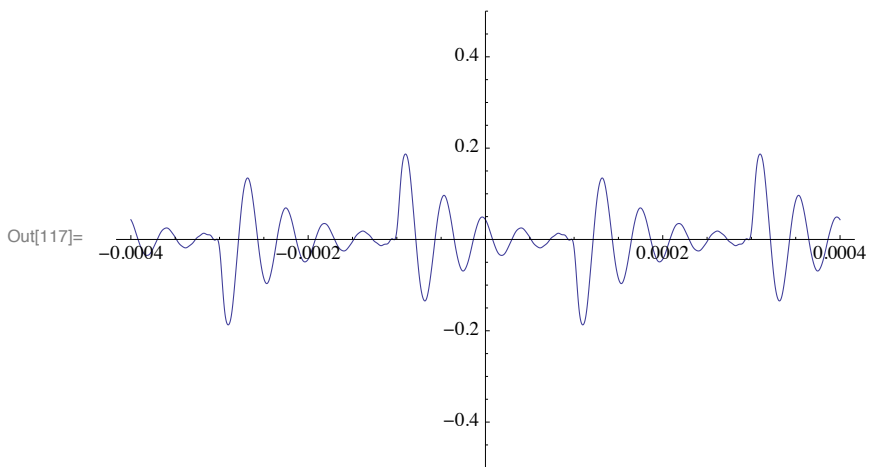
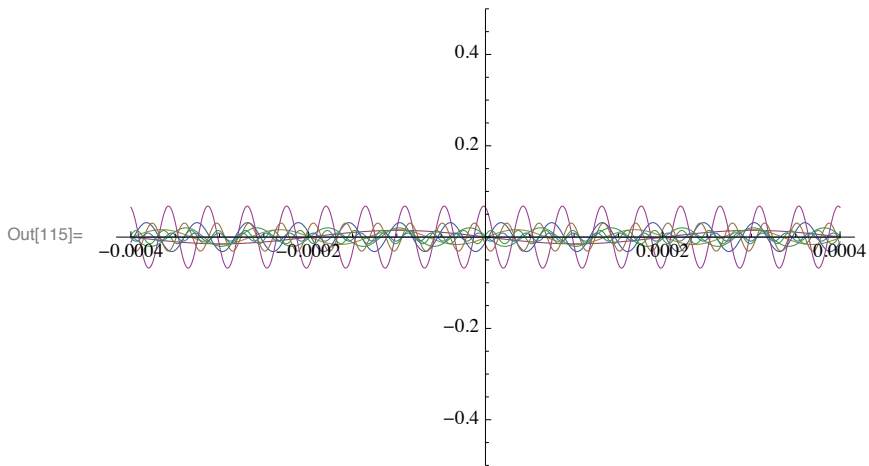
```





```
In[113]:= HR[k_] :=
  i * k * omega0 * cap * res / (i * k * omega0 * cap * res - (k * omega0)^2 * Lind * cap + 1);
LogLinearPlot[Abs[HR[k]], {k, 0.1, 150}, PlotRange -> {0, 1}]
Plot[{Abs[HR[0]] * a0, Abs[HR[1]] * a[1] Cos[omega0 * t + Arg[HR[1]]],
  Abs[HR[3]] * a[3] Cos[3 * omega0 * t + Arg[HR[3]]],
  Abs[HR[5]] * a[5] Cos[5 * omega0 * t + Arg[HR[5]]],
  Abs[HR[7]] * a[7] Cos[7 * omega0 * t + Arg[HR[7]]],
  Abs[HR[9]] * a[9] Cos[9 * omega0 * t + Arg[HR[9]]],
  Abs[HR[11]] * a[11] Cos[11 * omega0 * t + Arg[HR[11]]],
  Abs[HR[13]] * a[13] Cos[13 * omega0 * t + Arg[HR[13]]],
  Abs[HR[15]] * a[15] Cos[15 * omega0 * t + Arg[HR[15]]]},
{t, -T, T}, PlotRange -> {- .5, .5}]
Sout[t_] := a0 * Abs[HR[0]] +
  Sum[Abs[HR[k]] * a[k] * Cos[k * 2 * Pi * t / T + Arg[HR[k]]], {k, 1, Nterm}];
Plot[Sout[t], {t, -T, T}, PlotRange -> {- .5, .5}]
```



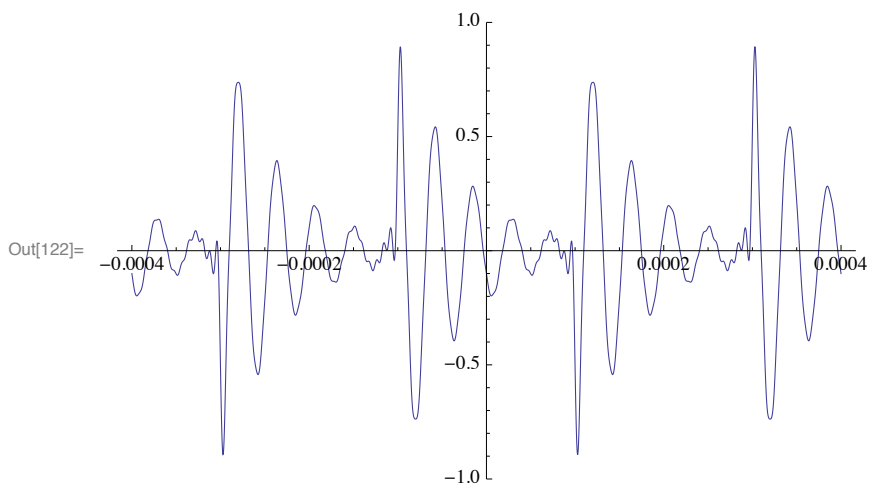
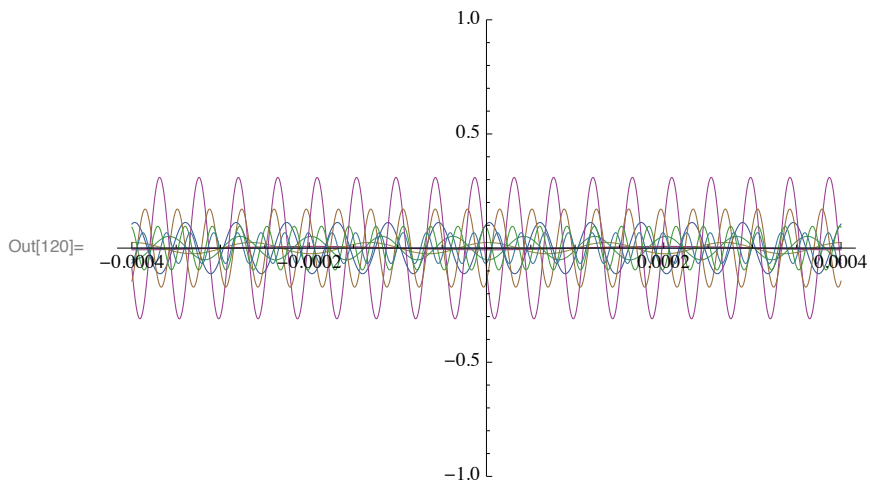
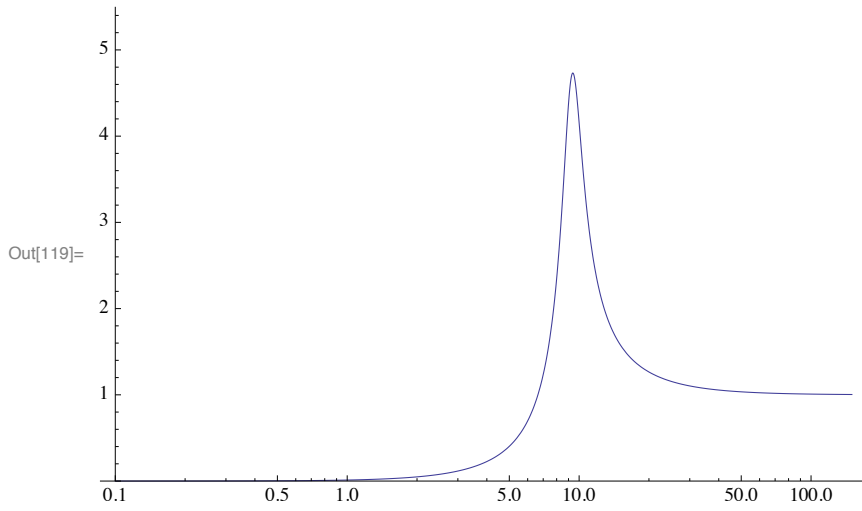


In[118]:=

```

HL[k_] :=
  - (k * omega0)^2 * cap * Lind / (i * k * omega0 * cap * res - (k * omega0)^2 * Lind * cap + 1);
LogLinearPlot[Abs[HL[k]], {k, 0.1, 150}, PlotRange -> {0, 5.5}]
Plot[{Abs[HL[0]] * a0, Abs[HL[1]] * a[1] Cos[omega0 * t + Arg[HL[1]]],
  Abs[HL[3]] * a[3] * Cos[3 * omega0 * t + Arg[HL[3]]],
  Abs[HL[5]] * a[5] * Cos[5 * omega0 * t + Arg[HL[5]]],
  Abs[HL[7]] * a[7] * Cos[7 * omega0 * t + Arg[HL[7]]],
  Abs[HL[9]] * a[9] * Cos[9 * omega0 * t + Arg[HL[9]]],
  Abs[HL[11]] * a[11] * Cos[11 * omega0 * t + Arg[HL[11]]],
  Abs[HL[13]] * a[13] * Cos[13 * omega0 * t + Arg[HL[13]]],
  Abs[HL[15]] * a[15] * Cos[15 * omega0 * t + Arg[HL[15]]]},
  {t, -T, T}, PlotRange -> {-1, 1}]
Sout[t_] := a0 * Abs[HL[0]] +
  Sum[Abs[HL[k]] * a[k] * Cos[k * 2 * Pi * t / T + Arg[HL[k]]], {k, 1, Nterm}];
Plot[Sout[t], {t, -T, T}, PlotRange -> {-1., 1.}]

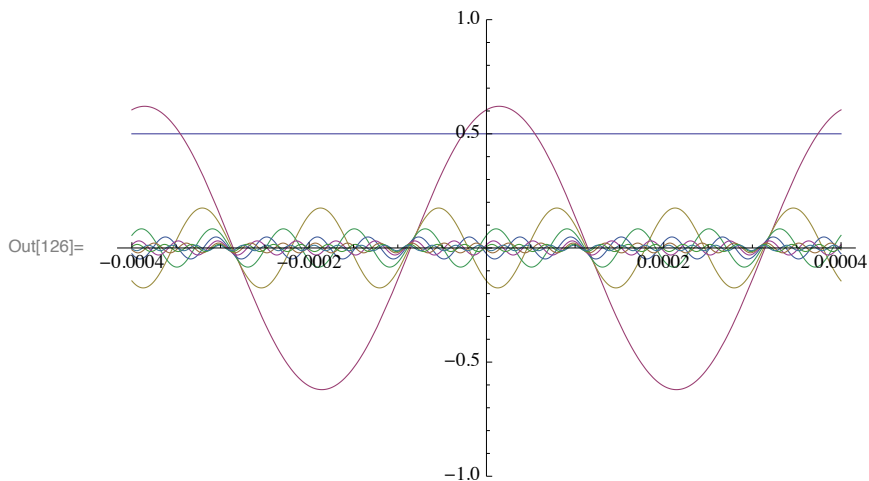
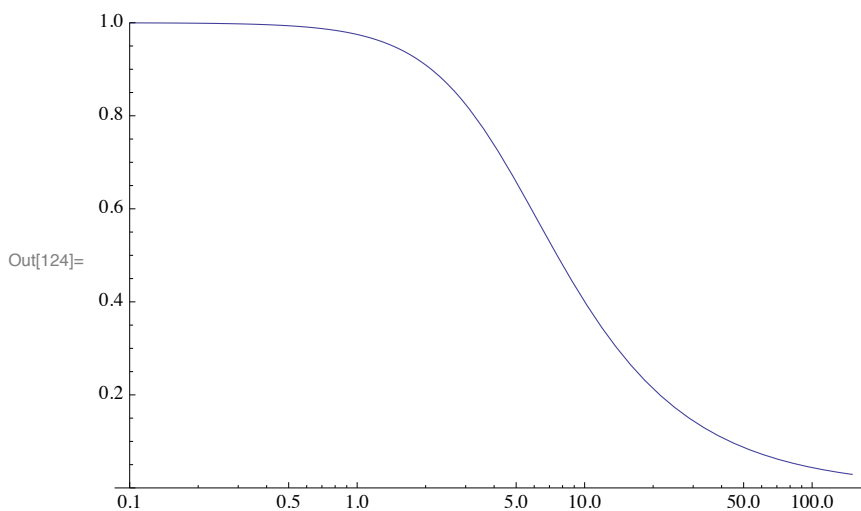
```

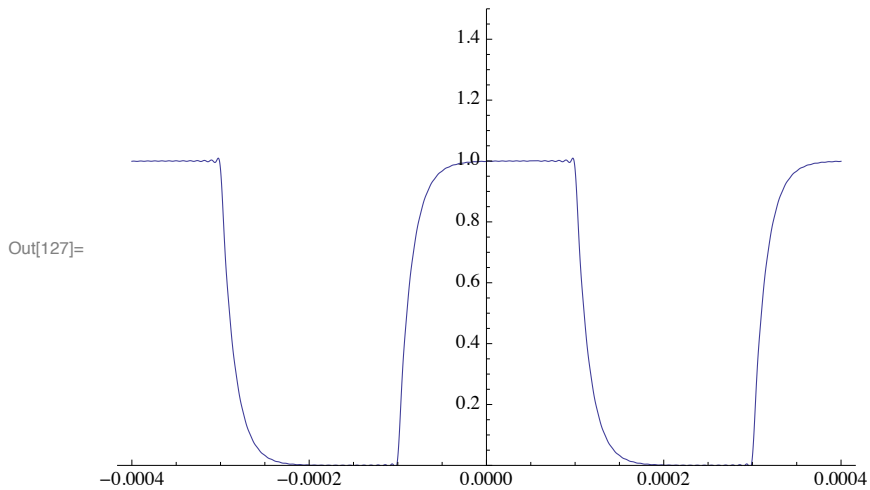


```

In[123]:= HRC[k_] := 1 / (1 + i (k * omega0 * cap2 * res));
LogLinearPlot[Abs[HRC[k]], {k, 0.1, 150}, PlotRange -> {0, 1}]
Sout[t_] := a0 * Abs[HRC[0]] +
  Sum[Abs[HRC[k]] * a[k] * Cos[k * 2 * Pi * t / T + Arg[HRC[k]]], {k, 1, Nterm}];
Plot[{Abs[HRC[0]] * a0, Abs[HRC[1]] * a[1] Cos[omega0 * t + Arg[HRC[1]]],
  Abs[HRC[3]] * a[3] * Cos[3 * omega0 * t + Arg[HRC[3]]],
  Abs[HRC[5]] * a[5] * Cos[5 * omega0 * t + Arg[HRC[5]]],
  Abs[HRC[7]] * a[7] * Cos[7 * omega0 * t + Arg[HRC[7]]],
  Abs[HRC[9]] * a[9] * Cos[9 * omega0 * t + Arg[HRC[9]]],
  Abs[HRC[11]] * a[11] * Cos[11 * omega0 * t + Arg[HRC[11]]],
  Abs[HRC[13]] * a[13] * Cos[13 * omega0 * t + Arg[HRC[13]]],
  Abs[HRC[15]] * a[15] * Cos[15 * omega0 * t + Arg[HRC[15]]]},
  {t, -T, T}, PlotRange -> {-1, 1}]
Plot[Sout[t], {t, -T, T}, PlotRange -> {0, 1.5}]

```





```

In[128]:= HCR[k_] := i (k * omega0 * cap2 * res) / (1 + i (k * omega0 * cap2 * res));
LogLinearPlot[Abs[HCR[k]], {k, 0.1, 150}, PlotRange -> {0, 1}]
Sout[t_] := a0 * Abs[HCR[0]] +
  Sum[Abs[HCR[k]] * a[k] * Cos[k * 2 * Pi * t / T + Arg[HCR[k]]], {k, 1, Nterm}];
Plot[{Abs[HCR[0]] * a0, Abs[HCR[1]] * a[1] Cos[omega0 * t + Arg[HCR[1]]],
  Abs[HCR[3]] * a[3] * Cos[3 * omega0 * t + Arg[HCR[3]]],
  Abs[HCR[5]] * a[5] * Cos[5 * omega0 * t + Arg[HCR[5]]],
  Abs[HCR[7]] * a[7] * Cos[7 * omega0 * t + Arg[HCR[7]]],
  Abs[HCR[9]] * a[9] * Cos[9 * omega0 * t + Arg[HCR[9]]],
  Abs[HCR[11]] * a[11] * Cos[11 * omega0 * t + Arg[HCR[11]]],
  Abs[HCR[13]] * a[13] * Cos[13 * omega0 * t + Arg[HCR[13]]],
  Abs[HCR[15]] * a[15] * Cos[15 * omega0 * t + Arg[HCR[15]]]},
{t, -T, T}, PlotRange -> {-0.5, 0.5}]
Plot[Sout[t], {t, -T, T}, PlotRange -> {-1., 1.}]

```

