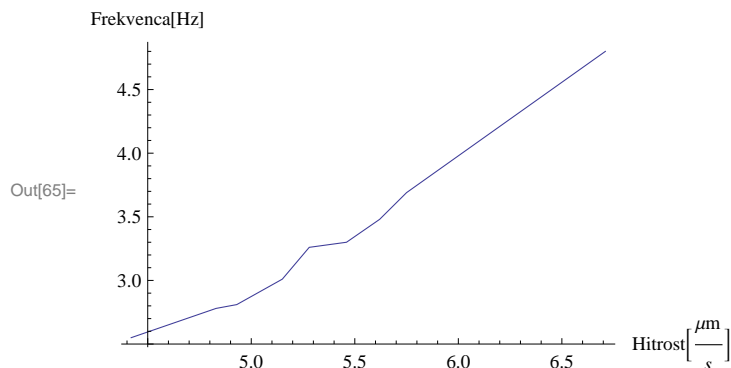


```
In[1]:= (* 6. Skalarni produkt in korelacija
        Primož Jeras *)
```

```
In[101]:= beton = ReadList["Documents\FMF\ROvF\Tema6\Beton.dat", {Real, Real, Real}];
          tintin = ReadList["Documents\FMF\ROvF\Tema6\Tintin.dat", {Real, Real, Real}];
          luna = ReadList["Documents\FMF\ROvF\Tema6\Luna.efe", {Real, Real, Real, Real}];
          htof = ReadList["Documents\FMF\ROvF\Tema6\HitrostTokaOdFrekvence.txt", {Real, Real, Real}];
```

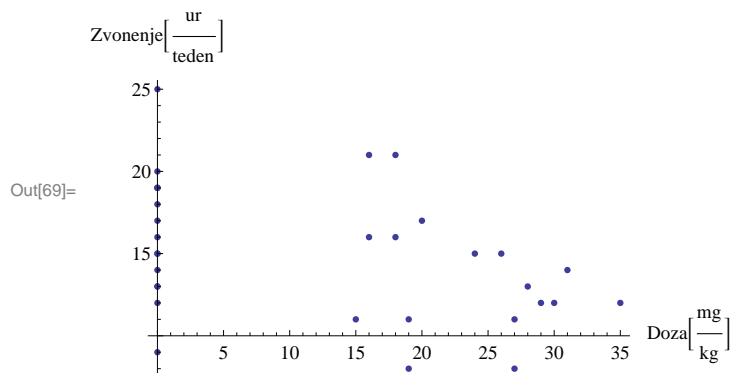
```
In[65]:= ListPlot[#{#[[1]], #[[2]]} & /@ htof, Joined → True,
              AxesLabel → {"Hitrost" [μm / s], "Frekvenca" [Hz]}]
          Correlation[#[[1]] & /@ htof, #[[2]] & /@ htof]
```



Out[66]= 0.98797

(\*Graf nam nakazuje linearno odvisnost frekvence od hitrosti crpanja, ki jo izračun korelacijskega koeficienta s svojo visoko vrednostjo (0.988) se potrdi.\*)

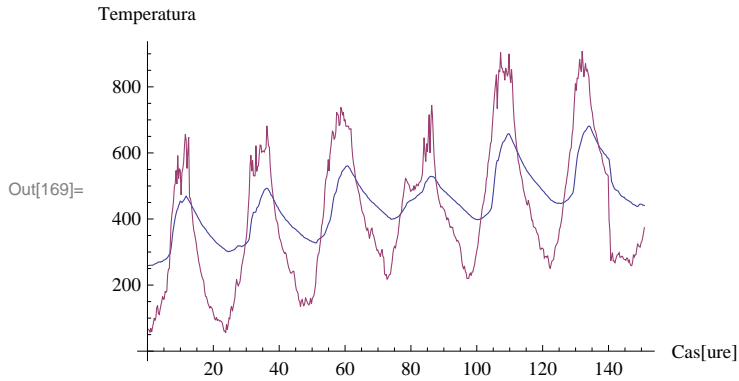
```
In[69]:= ListPlot[#{#[[2]], #[[3]]} & /@ tintin, AxesLabel → {"Doza" [mg / kg], "Zvonenje" [ur / teden]}]
          Correlation[#[[2]] & /@ tintin, #[[3]] & /@ tintin]
```



Out[70]= -0.39409

(\*Tabeliranje podatkov za rezultate preizkusa zdravila pokazuje, da je rezultat ni linearen. Sklepamo lahko, da neposredne korelacije med meritvami in da je zdravilo placebo. Korelacijski koeficient -0.4 nam pove da sta količina kvečjemu blago antikorelacijski, kar nam, skupaj z grafom, potrjuje da količina res nista odvisni.\*)

```
In[166]:= interval = 24 / (143 - 49) // N;
(*Delez dneva, ki ga predstavlja ena meritev med dvema vrhovi (en dan)*)
povrsina = {#[[1]] * interval, #[[2]]} & /@ beton;
notranjost = {#[[1]] * interval, #[[3]]} & /@ beton;
ListPlot[{povrsina, notranjost}, AxesLabel -> {"Cas[ure]", "Temperatura"}, Joined -> True]
```

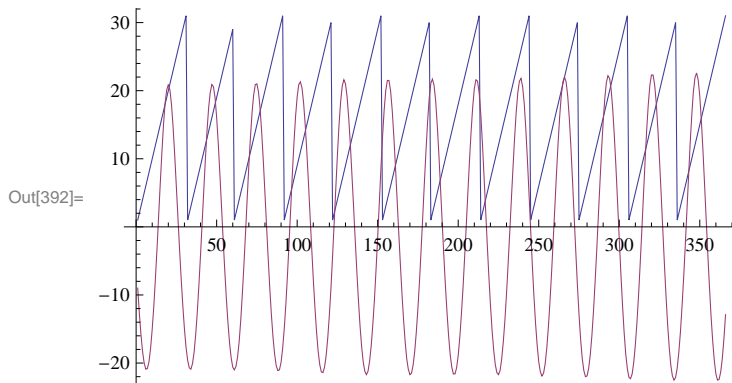


```
In[422]:= ListCorrelate#[[2]] & /@ beton, #[[3]] & /@ beton / (143 - 49) / 86 400
```

```
Out[422]= {14.7917}
```

(\*Notranja temperatura zaostaja 14 ur za zunanjo.\*)

```
In[392]:= ListLinePlot[{#[[1]] & /@ luna, #[[4]] & /@ luna}
```



```
In[416]:= ListCorrelate#[[4]] & /@ luna, #[[4]] & /@ luna / 86 400 * (30 * 6 + 31 * 5 + 29) / 12
```

```
Out[416]= {30.3125}
```

In[415]:= (\*Lunina perioda je 30.3 dni.\*)