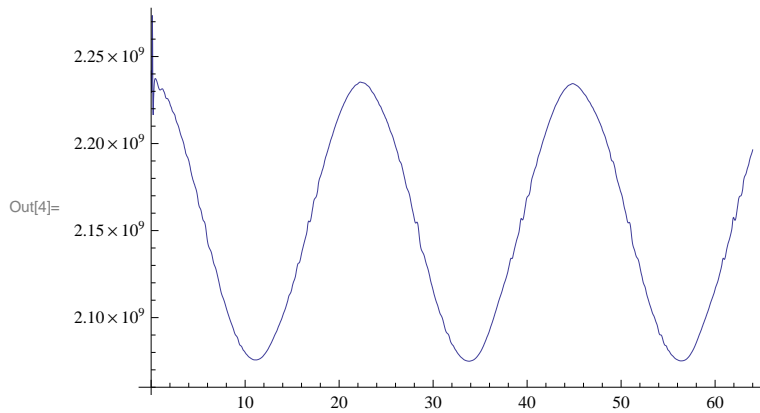


```

In[1]:= ImportDirectory = "C:\\Users\\drive\\DNV\\workspace\\LineMasterOppgave\\";
timeVec =
  Transpose[Import[StringJoin[ImportDirectory, "Signal.xlsx"], "Data"][[1]][[1]]];
forceVec = Transpose[
  Import[StringJoin[ImportDirectory, "Signal.xlsx"], "Data"][[1]][[2]]];
In[4]:= ListLinePlot[Transpose[{timeVec, forceVec}]]

```



```

In[5]:= Aw = Pi * R^2;
Vol = Aw * L;

In[7]:= r = + (Amplitude - Amplitude * Cos[Omega * t])
v = D[r, t]
a = D[v, t]
Kinematics = {-a, -v * 0, (-v) * Abs[v] * 1, 1};

Out[7]= Amplitude - Amplitude Cos[Omega t]

Out[8]= Amplitude Omega Sin[Omega t]

Out[9]= Amplitude Omega^2 Cos[Omega t]

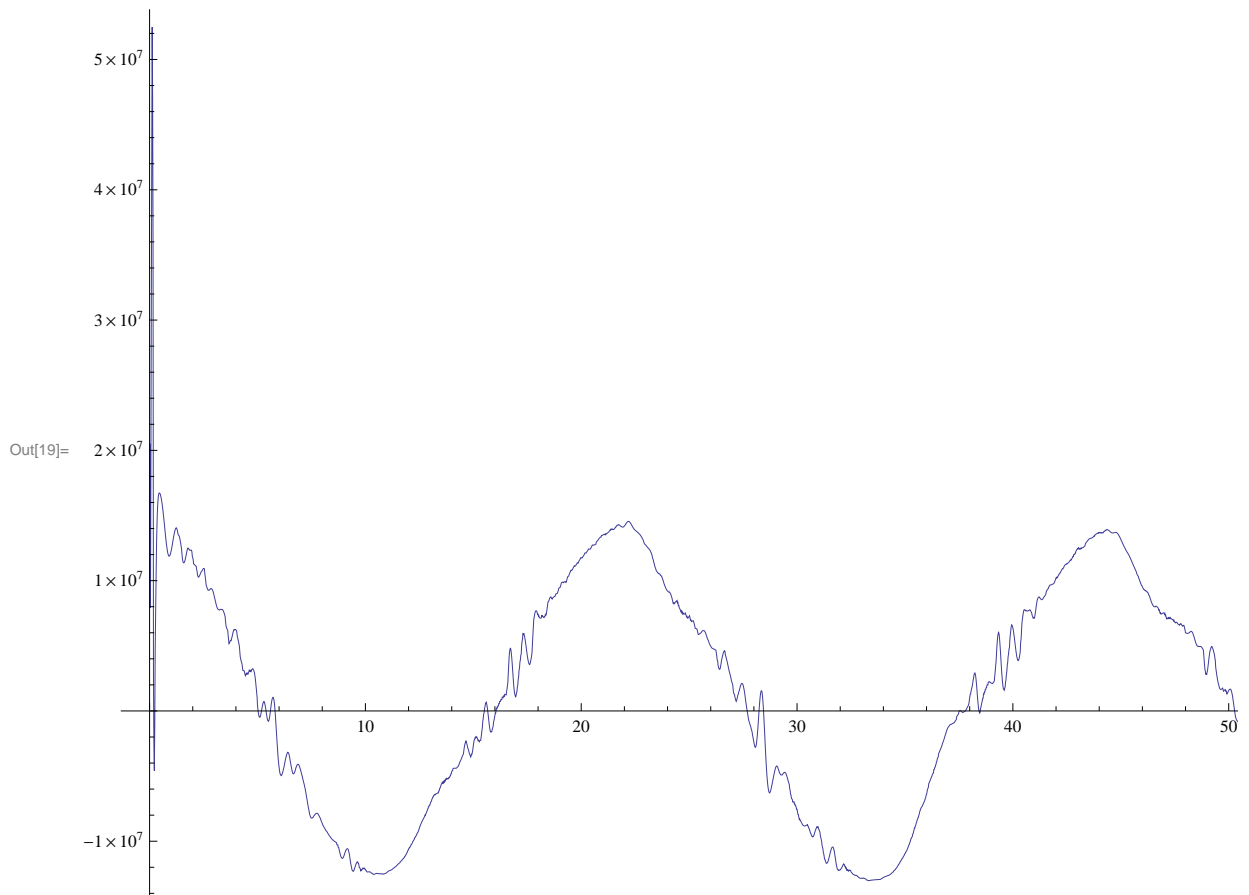
In[11]:= Amplitude = 6.0;
Omega = 2 * Pi / 22.6;
rho = 1025;
g = 9.81;
R = 18.75;
L = 200;

In[17]:= restVec = (rho * g * Vol - rho * g * Aw * r /. t -> #1) & /@ timeVec;

In[18]:= force = forceVec - restVec;

```

```
In[19]:= ListLinePlot[Transpose[{timeVec, force}]]
```



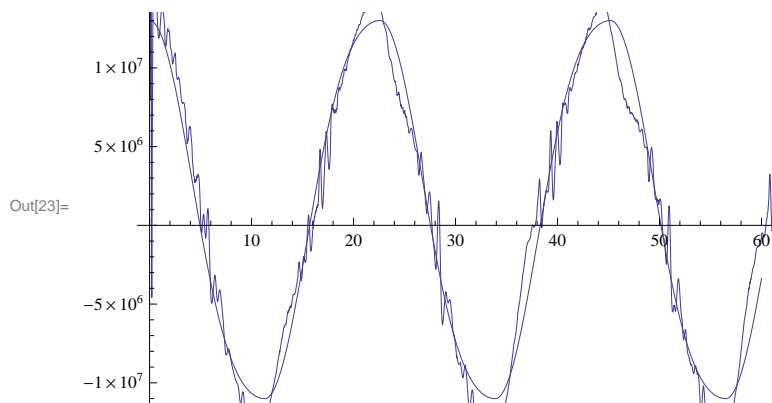
```
In[20]:= f = Kinematics /. t -> #1 &;
```

```
In[21]:= coeffs = LeastSquares[f/@timeVec[[1 ;; -1]], force[[1 ;; -1]]]
```

```
Out[21]= {-2.58901 × 107, 0., 1.25312 × 106, 1.00059 × 106}
```

```
In[22]:= forceLS = coeffs.Kinematics;
```

```
In[23]:= Show[Plot[forceLS, {t, 0, 60}],  
ListLinePlot[Transpose[{timeVec[[1 ;; -1]], force[[1 ;; -1]]}]]]
```



```
In[24]:= {A33, B1, B2, Fm} = coeffs
```

```
Out[24]= {-2.58901 × 107, 0., 1.25312 × 106, 1.00059 × 106}
```

```
In[25]:= A33 / (rho * Vol)
```

```
Out[25]= -0.114348
```