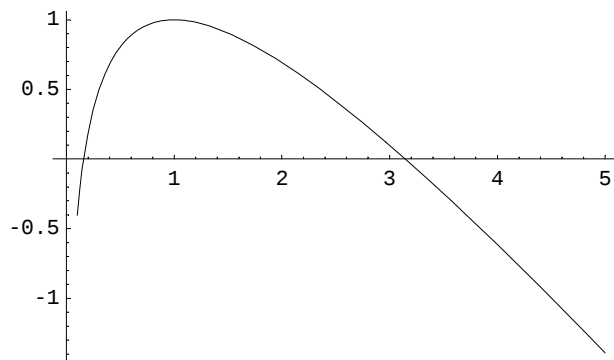


4. Ratkaise yhtälö $\ln(x)=x-2$.

```
In[3]:= Plot[Log[x] - x + 2, {x, 0.1, 5}]
```



```
Out[3]= - Graphics -
```

```
In[4]:= FindRoot[Log[x] == x - 2, {x, 0.2}]
```

```
Out[4]= {x -> 0.158594}
```

```
In[5]:= FindRoot[Log[x] == x - 2, {x, 3.0}]
```

```
Out[5]= {x -> 3.14619}
```

5. Ratkaise lineaarinen yhtälöryhmä

$$2x + 3y - 5z = 10$$

$$13x - z = 1$$

$$2y + z = 3$$

```
In[6]:= m = {{2, 3, -5}, {13, 0, -1}, {0, 2, 1}}
b = {10, 1, 3}
```

```
Out[6]= {{2, 3, -5}, {13, 0, -1}, {0, 2, 1}}
```

```
Out[7]= {10, 1, 3}
```

```
In[8]:= LinearSolve[m, b]
```

```
Out[8]= { 2/165, 317/165, -139/165 }
```

6. Taulukoi lukuparit $\{x, \ln x\}$, kun $x=1,2,\dots,10$. Muodosta paloittain interpoiloiva toisen asteen polynomi ja piirrä sen kuvaaja.

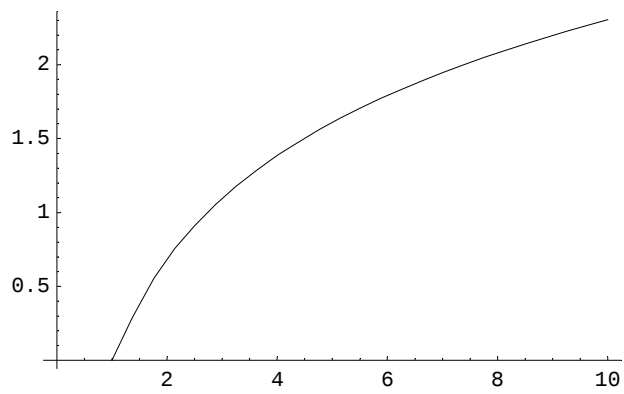
```
In[10]:= taulu = Table[{x, Log[x]}, {x, 10}] // N
```

```
Out[10]= {{1., 0.}, {2., 0.693147}, {3., 1.09861}, {4., 1.38629}, {5., 1.60944},
{6., 1.79176}, {7., 1.94591}, {8., 2.07944}, {9., 2.19722}, {10., 2.30259}}
```

```
In[11]:= inter = Interpolation[taulu, InterpolationOrder -> 2]
```

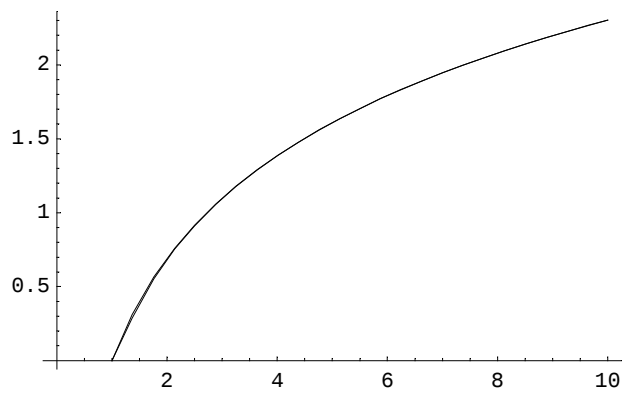
```
Out[11]= InterpolatingFunction[{{1., 10.}}, <>]
```

```
In[12]:= Plot[inter[x], {x, 1, 10}]
```



```
Out[12]= - Graphics -
```

```
In[13]:= Plot[{inter[x], Log[x]}, {x, 1, 10}]
```



```
Out[13]= - Graphics -
```