In[34]:=
```
k[x_] = 2 * x^3 / (x^2 - 1)
```

Out[34]=
$$\frac{2\,x^3}{-1+x^2}$$

In[35]:=
```
r[x_] = 2 * x^3 / ((1 + x^2)^2)
```

Out[35]=
$$\frac{2\,x^3}{\left(1+x^2\right)^2}$$

In[38]:=
```
Simplify[D[k[x], x]]
```

Out[38]=
$$\frac{2\,x^2\,\left(-3+x^2\right)}{\left(-1+x^2\right)^2}$$

In[39]:=
```
Simplify[D[r[x], x]]
```

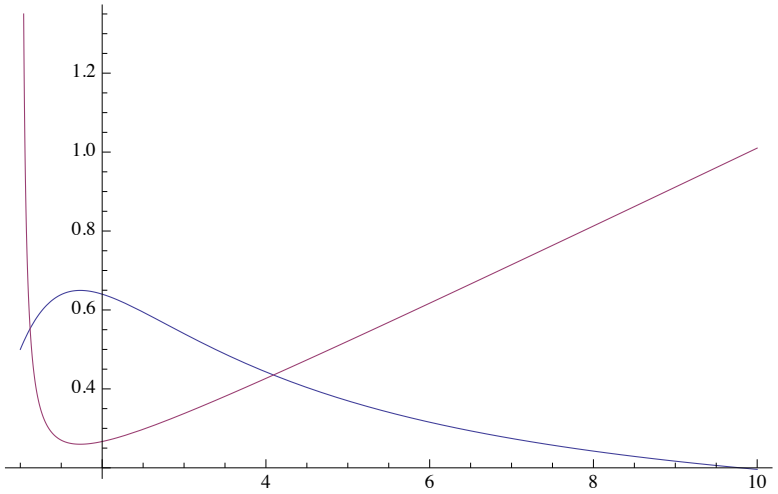
Out[39]=
$$-\frac{2\,x^2\,\left(-3+x^2\right)}{\left(1+x^2\right)^3}$$

In[36]:=
```
Simplify[D[r[x], x] / D[k[x], x]]
```

Out[36]=
$$-\frac{\left(-1+x^2\right)^2}{\left(1+x^2\right)^3}$$

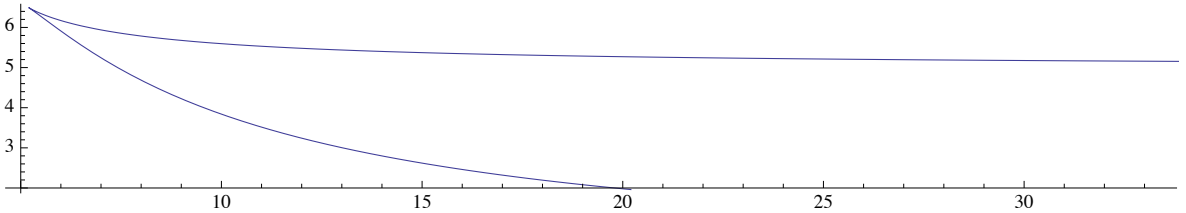
In[78]:=
```
Plot[{r[x], k[x] / 20}, {x, 1, 10}]
```

Out[78]=



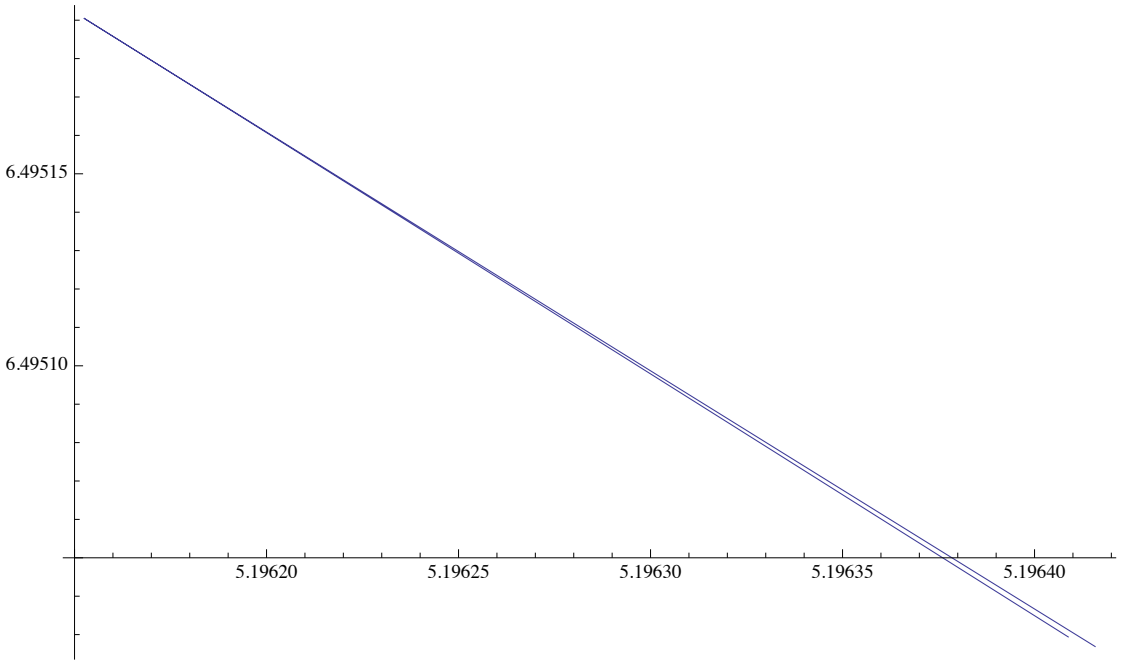
In[96]:=
```
ParametricPlot[{k[x], 10 * r[x]}, {x, 1.01, 10}]
```

Out[96]=



In[84]:= **ParametricPlot[{k[x], 10 * r[x]}, {x, Sqrt[3] - 0.01, Sqrt[3] + 0.01}]**

Out[84]=



In[79]:= **k[Sqrt[3]]**

Out[79]= $3\sqrt{3}$

In[81]:= **N[k[Sqrt[3]], 20]**

Out[81]= 5.1961524227066318806

In[82]:= **r[Sqrt[3]]**

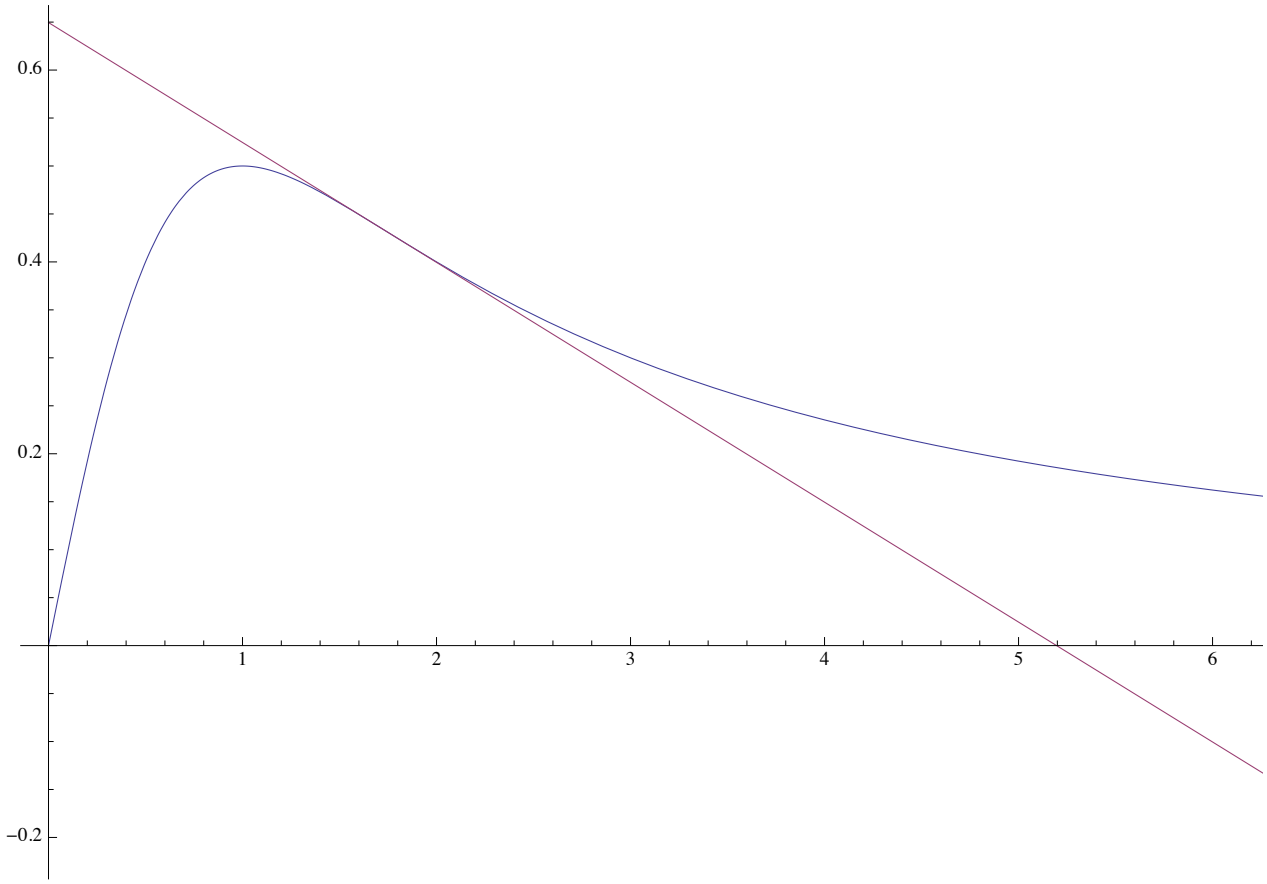
Out[82]= $\frac{3\sqrt{3}}{8}$

In[83]:= **N[r[Sqrt[3]], 20]**

Out[83]= 0.64951905283832898507

In[93]:=
```
Plot[{x / (x^2 + 1), 3 Sqrt[3] / 8 - x / 8}, {x, 0, 7}]
```

Out[93]=



In[89]:=
```
Simplify[D[x / (x^2 + 1), x]]
```

Out[89]=
$$\frac{1 - x^2}{\left(1 + x^2\right)^2}$$

In[90]:=
```
Simplify[D[x / (x^2 + 1), {x, 2}]]
```

Out[90]=
$$\frac{2\,x\,\left(-3 + x^2\right)}{\left(1 + x^2\right)^3}$$

In[91]:=
```
Sqrt[3] / (Sqrt[3]^2 + 1)
```

Out[91]=
$$\frac{\sqrt{3}}{4}$$

In[97]:=
```
N[Sqrt[3] / (Sqrt[3]^2 + 1), 20]
```

Out[97]=
```
0.43301270189221932338
```