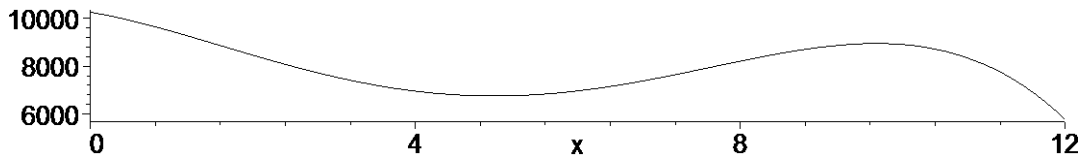Section 3.3 Second Derivative
#14

```
> U := -3.91*x^4+72.3*x^3-286.9*x^2-586.6*x+10262;
```

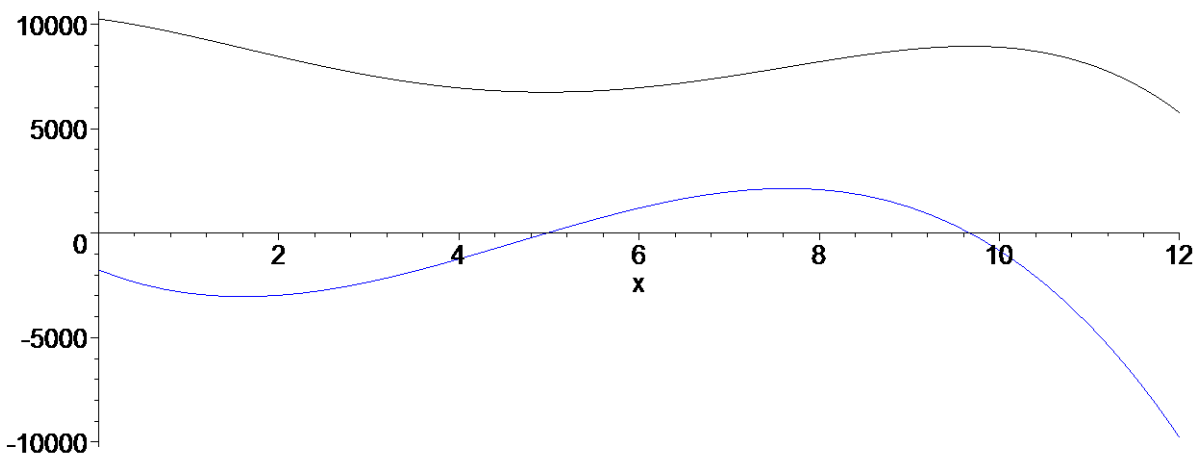$$U := -3.91\,x^4 + 72.3\,x^3 - 286.9\,x^2 - 586.6\,x + 10262$$

```
> plot(U,x=0..12, color = black);
```



```
> derivU := diff(U,x);
```

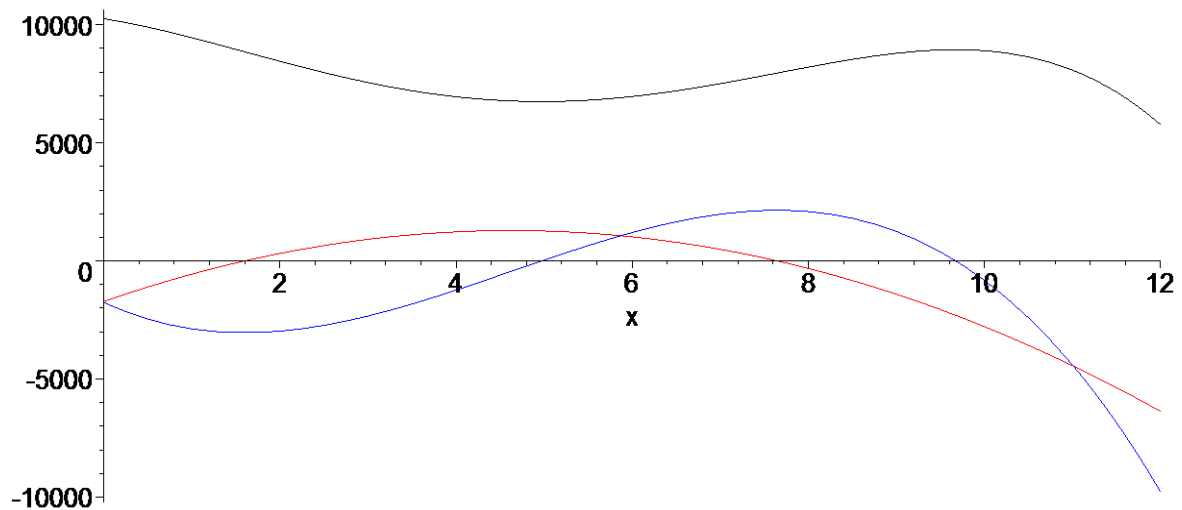$$derivU := -15.64\,x^3 + 216.9\,x^2 - 573.8\,x - 586.6$$

```
> plot([U,3*derivU],x=0..12, color = [black, blue]);
```



```
> secondderivU := diff(U,x,x);
```

$$secondderivU := -46.92\,x^2 + 433.8\,x - 573.8$$

```
> plot([U, 3*derivU, 3*secondderivU],x=0..12, color = [black, blue,
  red]);
```
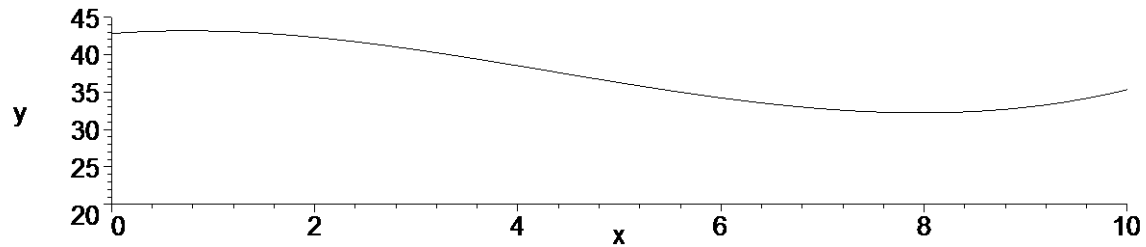

#16

```
> T:= 0.0581*x^3-0.759*x^2+1.03*x+42.8;
```
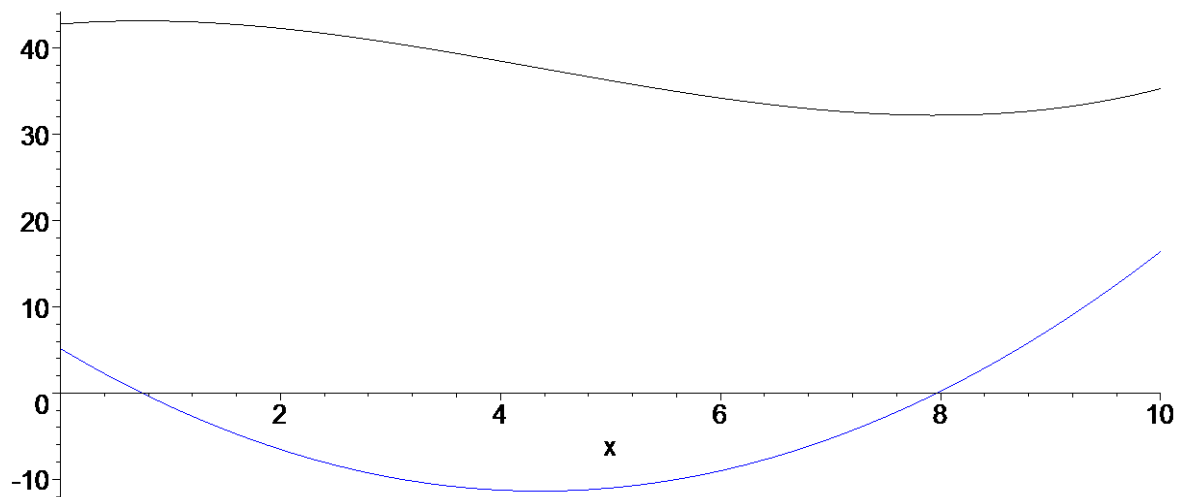
$$T := 0.0581\,x^3 - 0.759\,x^2 + 1.03\,x + 42.8$$

```
> plot(T,x=0..10, y=20..45, color = black);
```



```
> derivT := diff(T,x);
```

$$derivT := 0.1743\,x^2 - 1.518\,x + 1.03$$
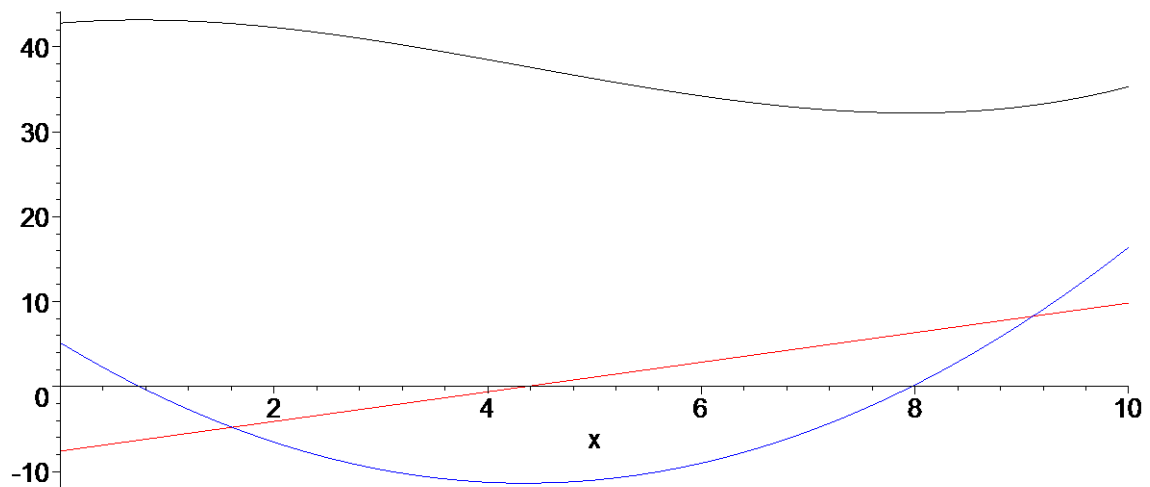
```
> plot([T,5*derivT], x=0..10, color = [black, blue]);
```



```
> secondderivT := diff(T,x,x);
```

$$secondderivT := 0.3486\,x - 1.518$$

```
> plot([T, 5*derivT, 5*secondderivT],x=0..10, color = [black, blue,
  red]);
```



```
>
```