Exercise:-5.3

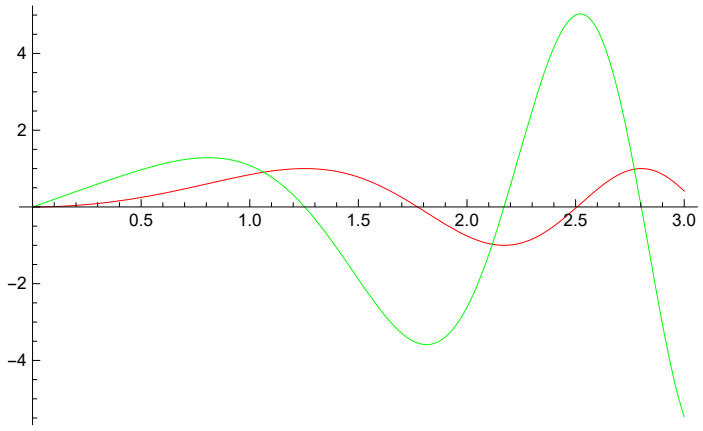
Ques;-1

```
f[x_] := Sin[x^2]
```

```
f'[x]
```

$$2\,x\,\text{Cos}\left[x^2\right]$$

```
Plot[{f[x], f'[x]}, {x, 0, 3}, PlotStyle → {Red, Green}]
```

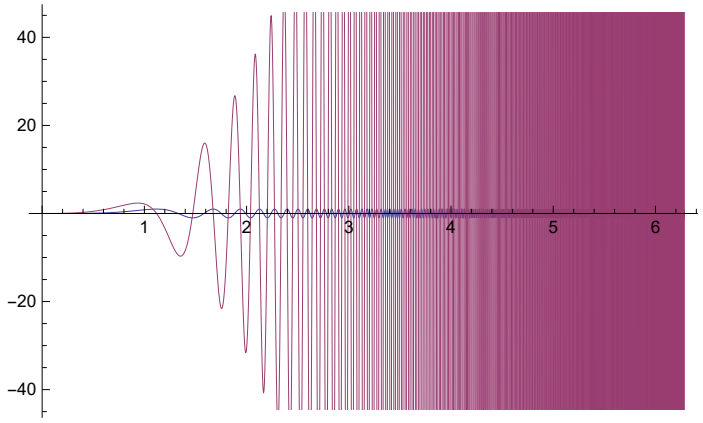



```
f[x_] := Sin[x^4]
```

```
f'[x]
```

$$4\,x^3\,\text{Cos}\left[x^4\right]$$

```
Plot[{f[x], f'[x]}, {x, 0, 2 π}]
```

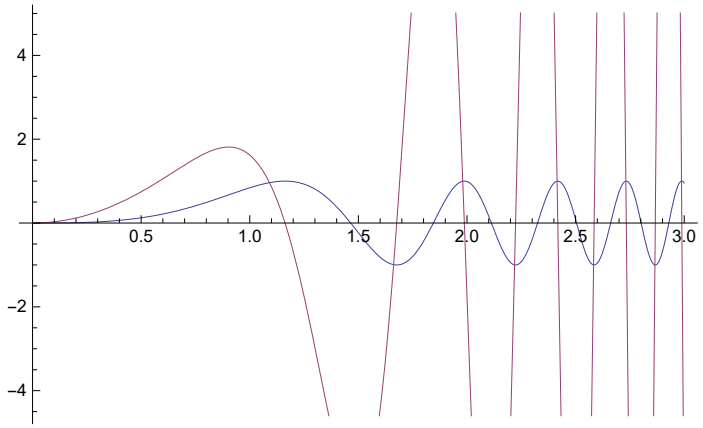



```
f[x_] := Sin[x^3]
```

```
f'[x]
```

$3\,x^2\,\text{Cos}\left[x^3\right]$

```
Plot[{f[x], f'[x]}, {x, 0, 3}]
```




```
f[x_] := Cos[x]
```

```
f'[a]
```

$-\text{Sin}[a]$

Ques:-2

```
Plot[{f[x], f[a] + f'[a] * (x - a)}, {x, -4 π, 4 π}, PlotStyle → {Red, Green}]
```