```
>
   # Define the function and its derivative
   f := x → sin(2 * x) − x^2 + 1.3;
   fp := x → 2 * cos(2 * x) − 2 * x;

   # Initial guess
   x0 := 3.1;

   # Newton's method parameters
   maxIter := 6;

   # Loop
   for n from 1 to maxIter do
      x1 := evalf(x0 − f(x0) / fp(x0));
      printf("x[%d] = %.12f, f(x[%d]) = %.12f, f'(x[%d]) = %.12f\n",
           n, x1, n, f(x1), n, fp(x1));
      x0 := x1;
   end do;
```

$$f := x \mapsto \sin(2 \cdot x) - x^2 + 1.3$$

$$fp := x \mapsto 2 \cdot \cos(2 \cdot x) - 2 \cdot x$$

$$x0 := 3.1$$

$$maxIter := 6$$

$$x1 := 1.104930503$$

```
x[1] = 1.104930503000, f(x[1]) = 0.881782560300, f'(x[1]) =
-3.402750933000
```

$$x0 := 1.104930503$$

$$x1 := 1.364068647$$

```
x[2] = 1.364068647000, f(x[2]) = -0.158907350000, f'(x[2]) =
-4.559613318000
```

$$x0 := 1.364068647$$

$$x1 := 1.329217589$$

```
x[3] = 1.329217589000, f(x[3]) = -0.002241865000, f'(x[3]) =
-4.429500072000
```

$$x0 := 1.329217589$$

$$x1 := 1.328711468$$

```
x[4] = 1.328711468000, f(x[4]) = -0.000000496000, f'(x[4]) =
-4.427546393000
```

$$x0 := 1.328711468$$

$$x1 := 1.328711356$$

```
x[5] = 1.328711356000, f(x[5]) = -0.000000001000, f'(x[5]) =
-4.427545961000
```

$$x0 := 1.328711356$$

$$x1 := 1.328711356$$

```
x[6] = 1.328711356000, f(x[6]) = -0.000000001000, f'(x[6]) =
-4.427545961000
```

$$x0 := 1.328711356 \qquad \textbf{(1)}$$

```
> # DONE (:
>
```