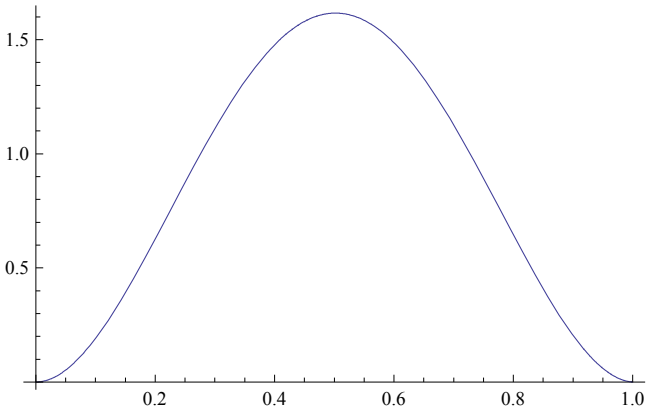
```
d1 = 1.(*unit length of beam*)
nm = 21 (*number of modes*)
For[m = 1, m < nm + 1, m++,
 Print[m ". mode"];
 L = (2 * m + 1) π / 2.; (*this expression is not true for lower modes,
 but in literature it's recommended for 4, 5 and higher modes*)
 Print[Cos[L] Cosh[L] - 1.]; (*transcendent equation,
 from which we obtain coefficients L, it should be equal zero*)
 Print[Plot[Sin[L * y / d1] - Sinh[L * y / d1] - (Sin[L] - Sinh[L]) / (Cos[L] - Cosh[L]) * (Cos[L * y / d1] - Cosh[L * y / d1]), {y, 0, d1}]]]
```

```
1.
```

```
21
```

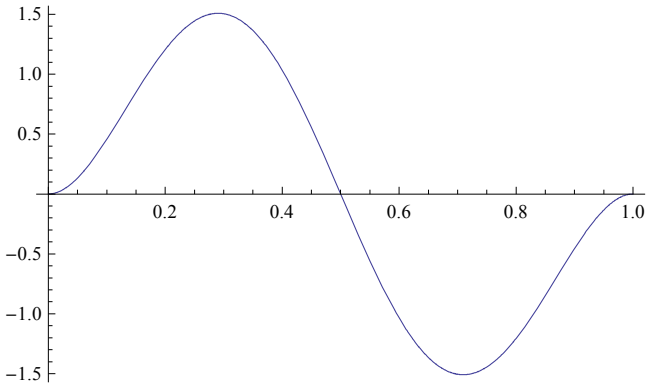
```
. mode
```

```
-1.
```



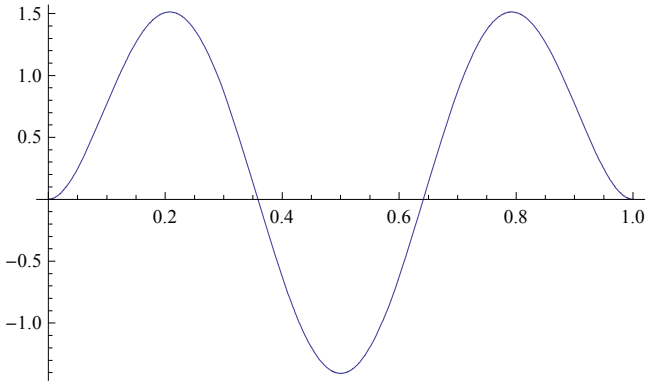

```
2 . mode
```

```
-1.
```



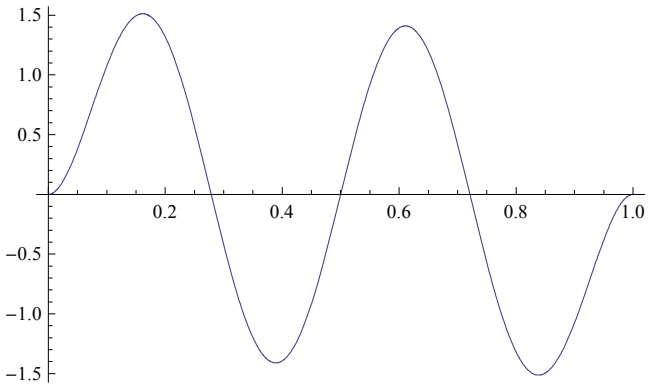

```
3 . mode
```

```
-1.
```



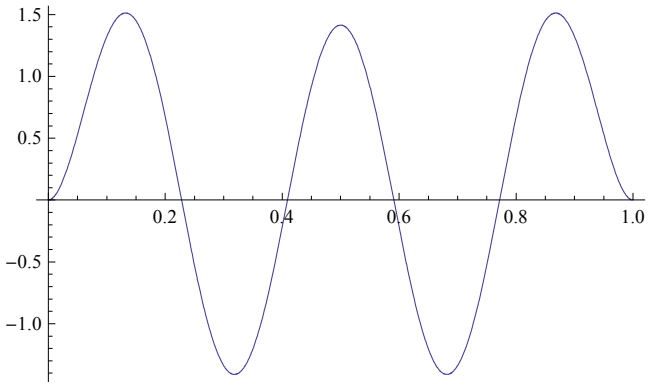
4 . mode

-1.



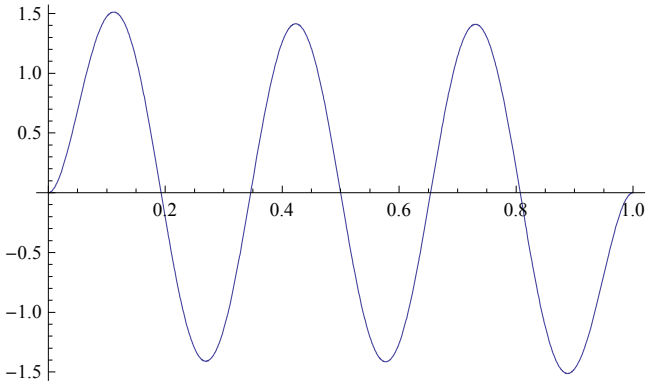
5 . mode

-1.



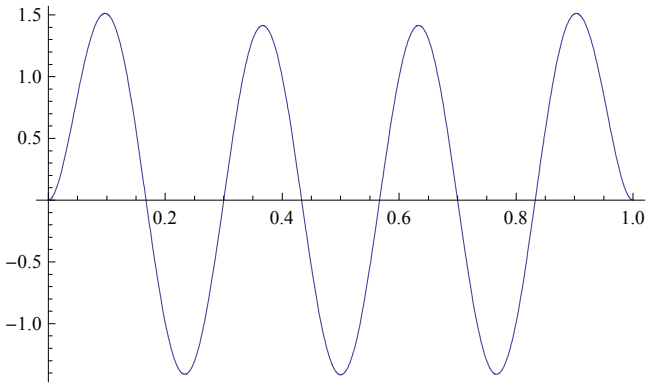
6 . mode

-1.



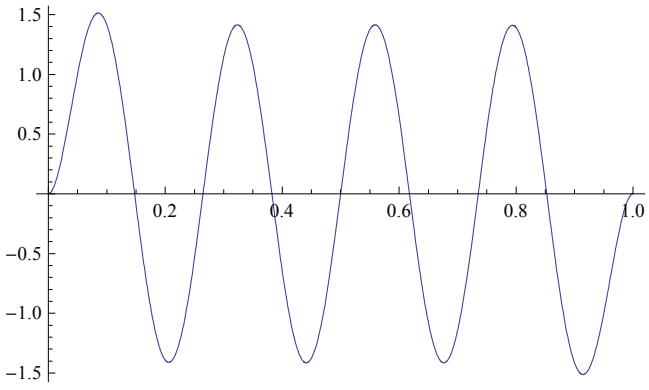
7 . mode

-1.00002



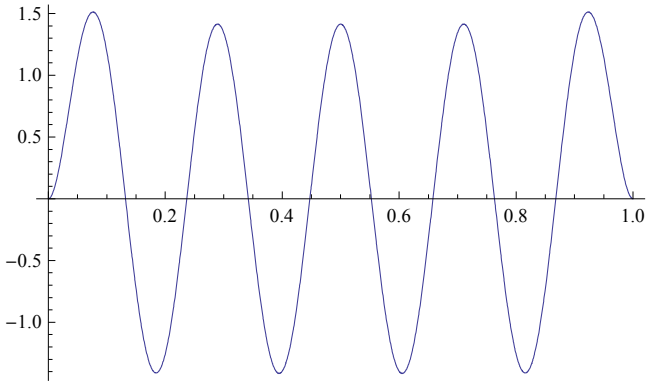
8 . mode

-1.00015



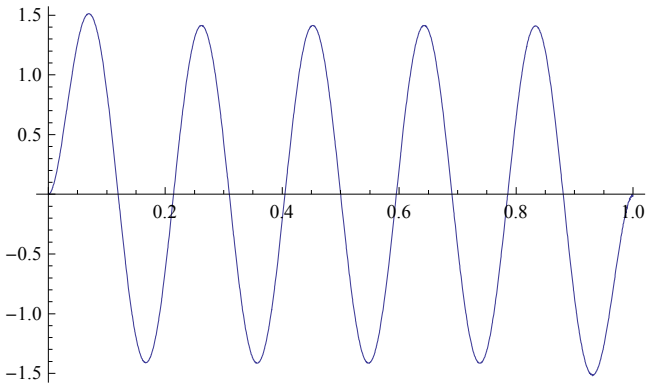
9 . mode

-1.01345



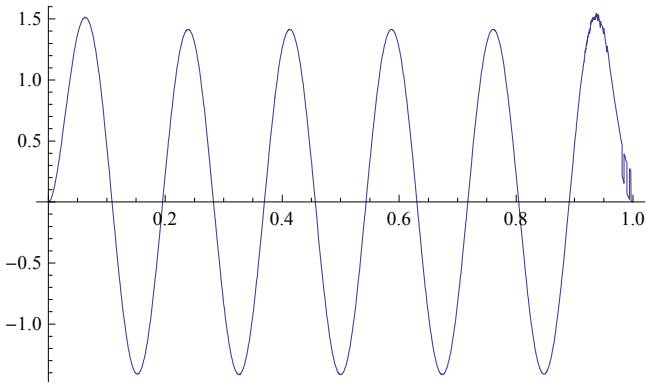
10 . mode

-1.05194



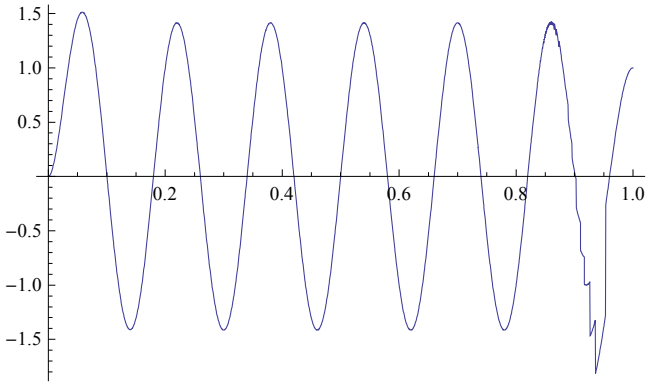
11 . mode

-8.80489



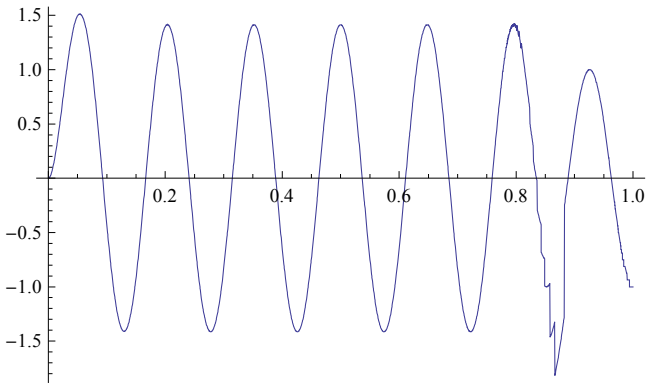
12 . mode

-14.9255



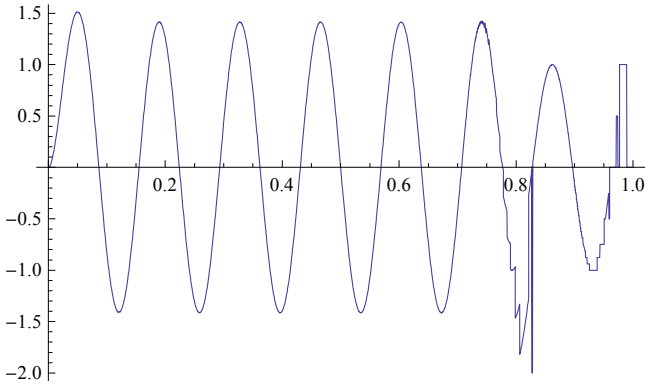
13 . mode

−4501.89



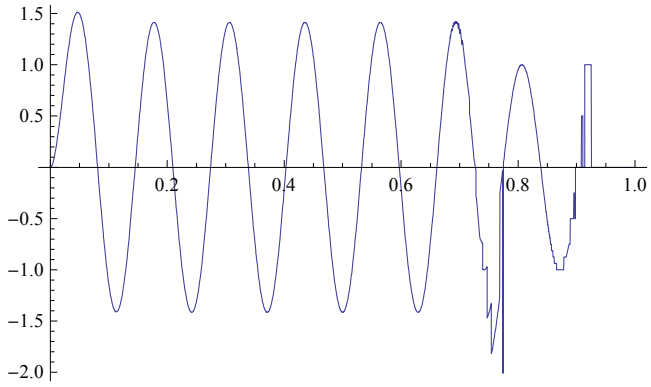
14 . mode

−19.7977



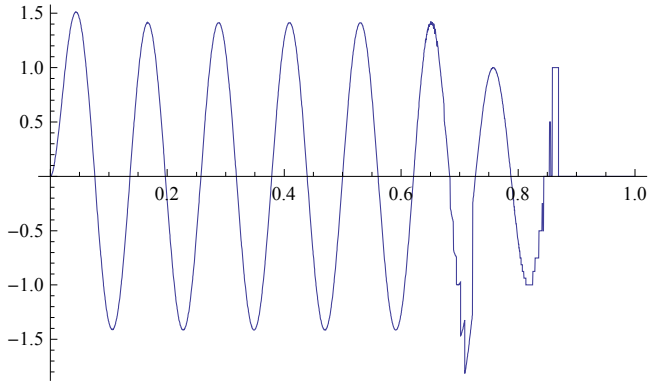
15 . mode

-2.58231×10^{6}



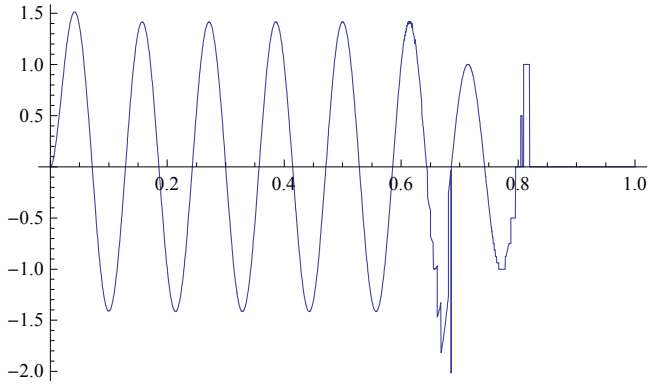
16 . mode

3.97303×10^{6}



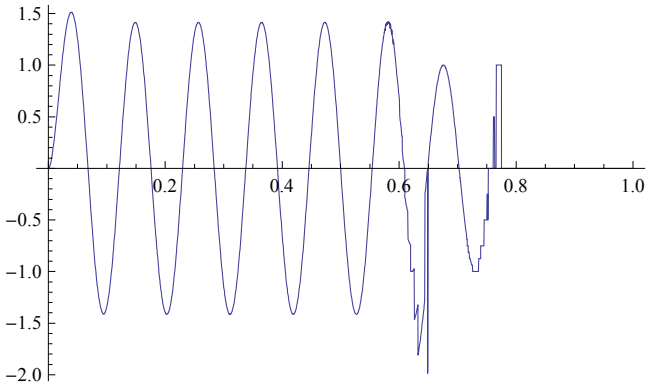
17 . mode

-1.47498×10^{9}



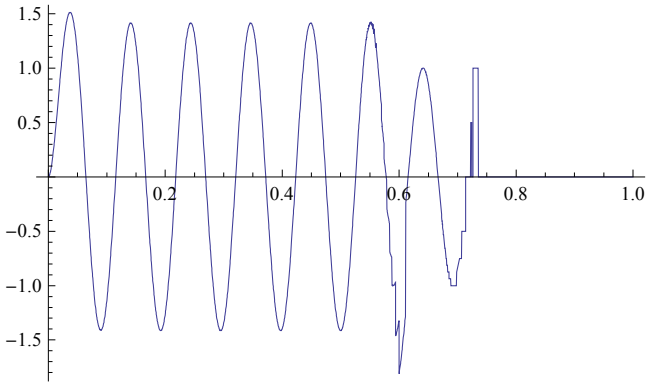
18 . mode

4.26044×10^{9}



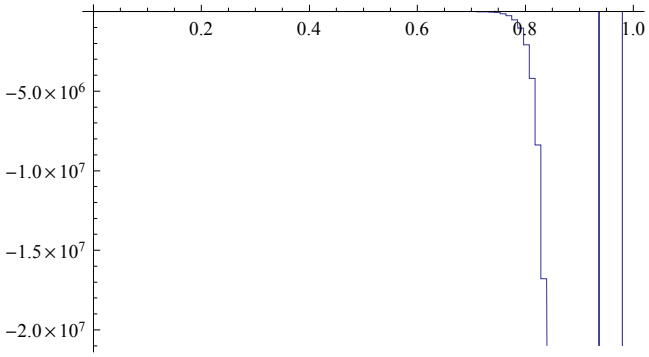
19 . mode

-8.39196×10^{11}



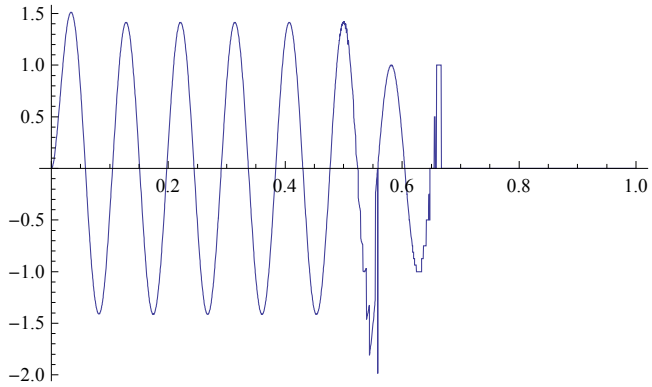
20 . mode

3.65577×10^{13}



21 . mode

-4.75813×10^{14}


1.5
1.0
0.5
0.2
0.4
0.6
0.8
1.0
−0.5
−1.0
−1.5
−2.0