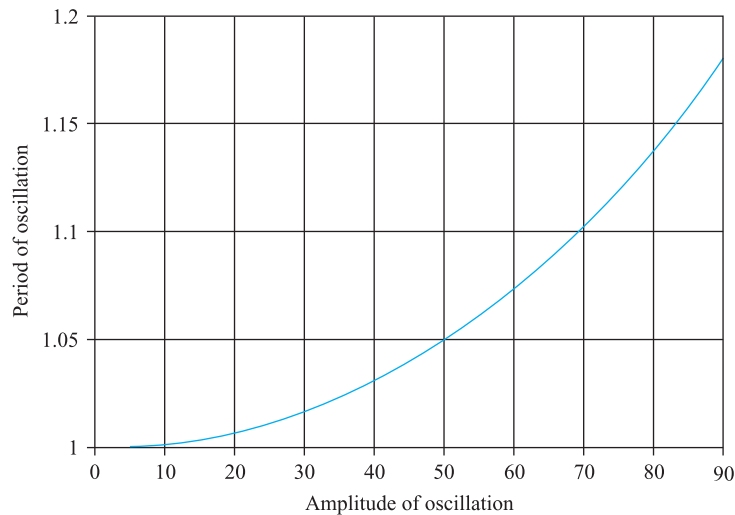**Figure 2.32** Periods of successive oscillations of equation (2.41), $\Theta_0 = 30°$, $h = 0.005$.

Time of crossing	Period of last cycle
0.254 352 13	
1.271 761 06	1.017 408 93
2.289 169 73	1.017 408 67
3.306 578 68	1.017 408 95
4.323 987 34	1.017 408 66
5.341 396 30	1.017 408 96

Figure 2.33 Variation of period of oscillations of equation (2.41) with amplitude.

The periods of the oscillations can also be measured using MAPLE. The procedure `fsolve` finds numerically the roots of a function. The output of the procedure `dsolve` is a function so we can use `fsolve` to find the zeros of that function, as in the following MAPLE worksheet. Note that the period of successive cycles is found more accurately and consistently using MAPLE. This is because the procedure `fsolve` uses a higher-order method to locate the zeros of the function rather than the linear interpolation method outlined in the algorithm in Figure 2.31.

```
> printlevel:=0:
> for i from 1 to 6 do;
  t1:=fsolve(xx(t)=0,t,(i-1)..(i-1+0.99)):
  t2:=fsolve(xx(t)=0,t,i..(i+0.99)):
  printf("%12.7f,%12.7f,%12.7f,\n",t1,t2,t2-t1);
  end do;
```

2.6　Engineering application: heating of an electrical fuse

The electrical fuse is a simple device for protecting an electrical apparatus or circuit from overload and possible damage after the failure of one or more components in the apparatus. A fuse is usually a short length of thin wire through which the electrical current