(%i1) `p:product(x-k,k,1,10);`

(%o1) $(x-10)\,(x-9)\,(x-8)\,(x-7)\,(x-6)\,(x-5)\,(x-4)\,(x-3)\,(x-2)\,(x-1)$

(%i2) `p:expand(p);`

(%o2) $x^{10}-55\,x^9+1320\,x^8-18150\,x^7+157773\,x^6-902055\,x^5+3416930\,x^4-8409500\,x^3+12753576\,x^2-10628640\,x+3628800$

(%i3) `eps:10^(-10);`

(%o3) $\dfrac{1}{10000000000}$

(%i4) `q:p+x^10*eps;`

(%o4) $\dfrac{10000000001\,x^{10}}{10000000000}-55\,x^9+1320\,x^8-18150\,x^7+157773\,x^6-902055\,x^5+3416930\,x^4-8409500\,x^3+12753576\,x^2-10628640\,x+3628800$

(%i9) `fpprec[16]:50;`

(%o9) 50

(%i12) `zeri_di_p:bfallroots(p);`

(%o12) $[x=1.0b0,$
$x=2.0000000000000000000000000000000000000000000000001b0,$
$x=2.9999999999999999999999999999999999999999999999782b0,$
$x=4.0000000000000000000000000000000000000000000000002118b0,$
$x=4.9999999999999999999999999999999999999999999999989246b0,$
$x=6.0000000000000000000000000000000000000000000000028346b0,$
$x=6.9999999999999999999999999999999999999999999999959881b0,$
$x=8.0000000000000000000000000000000000000000000000030491b0,$
$x=8.9999999999999999999999999999999999999999999999988597b0,$
$x=1.0000000000000000000000000000000000000000000000000154b1]$

(%i13) `zeri_di_q:bfallroots(q);`

(%o13) $[x=1.0000000000000000275573192239859880764918124410035 4b0,$
$x=1.9999999999974603174603607904114015471793264200799b0,$
$x=3.0000000005858035729474887379088362771584140428324b0,$
$x=3.9999999757274092436186242513945851862573907445595b0,$
$x=5.0000003390844543410308112596118875216030344387 95b0,$
$x=5.9999979004864650016018094993078799989416039450051b0,$
$x=7.0000065388136261830097101296860455793353633201228b0,$
$x=7.9999893478171943622585995168568713806473793065052b0,$

$x = 9.0000086477333985134947976511633366585582417192247b0,$
$x = 9.9999972442541881895546059237442750854066216528394b0]$

```
(%i19) dp:diff(p,x,1);
```

(%o19) $10\,x^9-495\,x^8+10560\,x^7-127050\,x^6+946638\,x^5-4510275\,x^4+13667720\,x^3-25228500\,x^2+25507152\,x-10628640$

```
(%i22) j:4;
```

(%o22) 4

```
(%i23) zeri_di_p[j];
```

(%o23) $x = 4.0000000000000000000000000000000000000000000000002118b0$

```
(%i24) z:4.0000000000000000000000000000000000000000000000002118b0;
```

(%o24) $4.0000000000000000000000000000000000000000000000002118b0$

```
(%i32) k:10 /* controlla condizionamento rispetto coefficiente k */;
```

(%o32) 10

```
(%i33) nc:bfloat(-z^k/subst(z,x,dp));
```

(%o33) $-2.427259259259259259259259259259259259259259259261142 9b2$

```
(%i34) zeri_di_q[j];
```

(%o34) $x = 3.9999999757274092436186242513945851862573907445595b0$

```
(%i35) err:3.9999999757274092436186242513945851862573907445595b0-z;
```

(%o35) $-2.427259075638137574860541481374260925565230075394 7b-8$

```
(%i36) nc*eps;
```

(%o36) $-2.427259259259259259259259259259259259259259259261142 9b-8$