```
    1: Script started on Thu 10 Nov 2016 05:23:55 PM PST
    2: bash-1$ cat -n functions.pl
    3:      1  % $Id: functions.pl,v 1.3 2016-11-08 15:04:13-08 - - $
    4:      2
    5:      3  mathfns( X, List ) :-
    6:      4     S is sin( X ),
    7:      5     C is cos( X ),
    8:      6     Q is sqrt( X ),
    9:      7     List = [S, C, Q].
   10:      8
   11:      9  constants( List ) :-
   12:     10     Pi is pi,
   13:     11     E is e,
   14:     12     Epsilon is epsilon,
   15:     13     List = [Pi, E, Epsilon].
   16:     14
   17:     15  sincos( X, Y ) :-
   18:     16     Y is sin( X ) ** 2 + cos( X ) ** 2.
   19:     17
   20:     18  haversine_radians( Lat1, Lon1, Lat2, Lon2, Distance ) :-
   21:     19     Dlon is Lon2 - Lon1,
   22:     20     Dlat is Lat2 - Lat1,
   23:     21     A is sin( Dlat / 2 ) ** 2
   24:     22        + cos( Lat1 ) * cos( Lat2 ) * sin( Dlon / 2 ) ** 2,
   25:     23     Dist is 2 * atan2( sqrt( A ), sqrt( 1 - A )),
   26:     24     Distance is Dist * 3961.
   27:     25
   28: bash-2$ gprolog
   29: GNU Prolog 1.4.4 (64 bits)
   30: Compiled Nov  6 2014, 18:04:28 with gcc
   31: By Daniel Diaz
   32: Copyright (C) 1999-2013 Daniel Diaz
   33: | ?- [functions].
   34: compiling /afs/cats.ucsc.edu/courses/cmps112-wm/Languages/prolog/Example
s/functions.pl for byte code...
   35: /afs/cats.ucsc.edu/courses/cmps112-wm/Languages/prolog/Examples/function
s.pl compiled, 25 lines read - 3889 bytes written, 7 ms
   36:
   37: (2 ms) yes
   38: | ?- mathfns(1.57,List).
   39:
   40: List = [0.99999968293183461,0.00079632671073326335,1.2529964086141667]
   41:
   42: yes
   43: | ?- constants(L).
   44:
   45: L = [3.1415926535897931,2.7182818284590451,2.220446049250313e-16]
   46:
   47: yes
   48: | ?- haversine_radians(1.5,2.3,7.8,9.7,Dist).
   49:
   50: Dist = 267.77679396961707
   51:
   52: yes
   53: | ?-
   54:
   55: bash-3$ exit
   56: exit
```

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57:
58: Script done on Thu 10 Nov 2016 05:25:09 PM PST
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