

```

1  /* Quadratic equation. */
2
3  discriminant(A, B, C, D):-
4      D is B*B - 4*A*C.
5  :- arithmetic_function(discriminant/3).
6
7  quadeq(A, C, B):-
8      A == 0,
9      X is -C / B,
10     write('Equation is linear and has a single root:'), nl,
11     write(X), nl.
12 quadeq(A, B, C):-
13     D is discriminant(A, B, C),
14     D > 0,
15     X1 is (-B + sqrt(D))/(2*A),
16     X2 is (-B - sqrt(D))/(2*A),
17     write('Equation has two roots:'), nl,
18     write(X1), nl,
19     write(X2), nl.
20 quadeq(A, B, C):-
21     D is discriminant(A, B, C),
22     D == 0,
23     X is -B/(2*A),
24     write('Equation has one root:'), nl,
25     write(X), nl.
26 quadeq(A, B, C):-
27     D is discriminant(A, B, C),
28     D < 0,
29     write('Equation has no roots. '), nl.
30
31 :- quadeq(1, 6, 9).
32 :- quadeq(0, 4, 4).
33 :- quadeq(1, 2, 3).
34 :- quadeq(1, 0, -100).
35
36 /*
37 ?- ['./quadratic.prolog'].
38 Equation has one root:
39 -3
40 Equation is linear and has a single root:
41 -1
42 Equation has no roots.
43 Equation has two roots:
44 10.0
45 -10.0
46 % ./quadratic.prolog compiled 0.00 sec, 2,008 bytes
47 true.
48 */

```