

```
01 void prefun(float &f, float &fd, float &p,  
02             float &dk, float &pk, float &ck)  
03 {  
04     float ak, bk, pratio, qrt;  
05  
06     if (p <= pk)  
07     {  
08         pratio = p / pk;  
09         f = G4 * ck * (pow(pratio, G1) - 1.0);  
10         fd = (1.0 / (dk * ck)) * pow(pratio, -G2);  
11     }  
12     else  
13     {  
14         ak = G5 / dk;  
15         bk = G6 * pk;  
16         qrt = sqrt(ak / (bk + p));  
17         f = (p - pk) * qrt;  
18         fd = (1.0 - 0.5 * (p - pk) / (bk + p)) * qrt;  
19     }  
20 }
```