```
flex_psi> lm2 <- lm(PSI ~ log10(1 + SV) + RD^2 + CP^0.5)
flex_psi> print(summary(lm2))

Call: lm(formula = PSI ~ log10(1 + SV) + RD^2 + CP^0.5)
Residuals:
    Min      1Q    Median    3Q      Max
 -0.5458 -0.3319 -0.04131 0.2205 1.107


Coefficients:
                 Value Std. Error   t value Pr(>|t|)
   (Intercept)  5.0331     0.1263   39.8634   0.0000
 log10(1 + SV) -1.9179     0.1395  -13.7457   0.0000
      I(RD^2)  -1.3889     0.3326   -4.1756   0.0001
     I(CP^0.5) -0.0087     0.0070   -1.2417   0.2185

Residual standard error: 0.3858 on 70 degrees of freedom
Multiple R-Squared: 0.8442


Correlation of Coefficients:
                (Intercept) log10(1 + SV) I(RD^2)
 log10(1 + SV) -0.8506
      I(RD^2)  -0.2268       0.0134
     I(CP^0.5)  0.3000      -0.6496        0.0270
flex_psi> print(anova(lm2))
Analysis of Variance Table


Response: PSI


Terms added sequentially (first to last)
               Df Sum of Sq Mean Sq F Value   Pr(F)
 log10(1 + SV) 1   53.6505 53.6505 360.538 0.000000
      I(RD^2)  1    2.5549  2.5549  17.169 0.000094
     I(CP^0.5) 1    0.2294  0.2294   1.542 0.218502
      Residuals 70 10.4165  0.1488
flex_psi> lm3 <- lm(PSI ~ log10(1 + SV) + log10(1 + RDV) + RD^2 + CP^0.5)
flex_psi> print(summary(lm3))

Call: lm(formula = PSI ~ log10(1 + SV) + log10(1 + RDV) + RD^2 + CP^0.5)
Residuals:
    Min      1Q    Median    3Q      Max
 -0.5645 -0.2148 -0.05779 0.204 0.7287


Coefficients:
```

```
                 Value Std. Error   t value Pr(>|t|)
   (Intercept)  4.8316     0.1188   40.6643   0.0000
 log10(1 + SV) -1.2857     0.1822   -7.0576   0.0000
log10(1 + RDV) -1.1083     0.2365   -4.6856   0.0000
      I(RD^2)  -1.1902     0.2949   -4.0365   0.0001
     I(CP^0.5) -0.0114     0.0062   -1.8517   0.0683

Residual standard error: 0.3384 on 69 degrees of freedom
Multiple R-Squared: 0.8818


Correlation of Coefficients:
                (Intercept) log10(1 + SV) log10(1 + RDV) I(RD^2)
 log10(1 + SV) -0.8008
log10(1 + RDV)  0.3619      -0.7406
      I(RD^2) -0.2612        0.1154       -0.1438
     I(CP^0.5)  0.3126      -0.5045        0.0945        0.0131
flex_psi> print(anova(lm3))
Analysis of Variance Table


Response: PSI


Terms added sequentially (first to last)
               Df Sum of Sq Mean Sq F Value     Pr(F)
 log10(1 + SV)  1   53.6505 53.6505 468.466 0.0000000
log10(1 + RDV)  1    3.0620  3.0620  26.737 0.0000022
      I(RD^2)   1    1.8440  1.8440  16.101 0.0001503
     I(CP^0.5)  1    0.3927  0.3927   3.429 0.0683462
      Residuals 69   7.9021  0.1145


flex_psi> print(anova(lm2, lm3))        Model Comparison
Analysis of Variance Table


Response: PSI


                                          Terms Resid. Df     RSS
1              log10(1 + SV) + RD^2 + CP^0.5        70 10.4165
2 log10(1 + SV) + log10(1 + RDV) + RD^2 + CP^0.5   69  7.9021


              Test Df Sum of Sq F Value          Pr(F)
1
2 +log10(1 + RDV)  1   2.51434 21.9547 0.0000135804
```

```
source("try-mtrx.s")
> #source(flexdat.s")
attach(flex.frame.new, 2)
> Y <- PSI
> X <- cbind(1, log10(1 + SV), RD^2, CP^0.5)
> dimnames(X)[[2]] <- c("1", "log10(1+SV)", "RD^2", "CP^0.5")
> XT <- t(X)
> XTX <- XT %*% X
> XTXI <- solve(XTX)
> H <- X %*% XTXI %*% XT
> beta <- XTXI %*% XT %*% Y
> print(X[1:4, 1:4])
        1 log10(1+SV)    RD^2     CP^0.5
IL-F3 1    0.5797836 0.0100    0.000000
IL-F4 1    1.3324385 0.0484   18.520259
IL-F5 1    1.0086002 0.0064    2.828427
IL-F6 1    0.6532125 0.0064    0.000000
> print(Y[1:4])
 IL-F3 IL-F4 IL-F5 IL-F6
   4.3   2.4   3.3   4.4
> print(XT[1:4, 1:4])
                  IL-F3      IL-F4    IL-F5     IL-F6
          1 1.0000000   1.000000 1.000000 1.0000000
log10(1+SV) 0.5797836   1.332438 1.008600 0.6532125
       RD^2 0.0100000   0.048400 0.006400 0.0064000
     CP^0.5 0.0000000  18.520259 2.828427 0.0000000
> print(XTX[1:4, 1:4])
                  1 log10(1+SV)       RD^2     CP^0.5
          1 74.00000    75.243560   5.623900  565.93854
log10(1+SV) 75.24356    89.753868   5.546208  746.98887
       RD^2  5.62390     5.546208   1.775583   39.05244
     CP^0.5 565.93854  746.988867  39.052441 9582.00000
> print(XTXI[1:4, 1:4])
                       1  log10(1+SV)          RD^2         CP^0.5
          1  0.107125429 -0.100699961 -0.0639961226   0.0017840269
log10(1+SV) -0.100699961  0.130828344  0.0041787264  -0.0042684738
       RD^2 -0.063996123  0.004178726  0.7435218138   0.0004237183
     CP^0.5  0.001784027 -0.004268474  0.0004237183   0.0003300256
> print(beta)
                 [,1]
          1  5.03306638
```

```
log10(1+SV) -1.91792059
       RD^2 -1.38893699
     CP^0.5 -0.00870147
> lm2 <- lm(PSI ~ log10(1 + SV) + RD^2 + CP^0.5)
> print(summary(lm2))

Call: lm(formula = PSI ~ log10(1 + SV) + RD^2 + CP^0.5)
Residuals:
     Min       1Q    Median      3Q     Max
  -0.5458  -0.3319  -0.04131  0.2205   1.107

Coefficients:
                  Value Std. Error  t value Pr(>|t|)
(Intercept)      5.0331     0.1263  39.8634   0.0000
log10(1 + SV)   -1.9179     0.1395 -13.7457   0.0000
     I(RD^2)    -1.3889     0.3326  -4.1756   0.0001
   I(CP^0.5)    -0.0087     0.0070  -1.2417   0.2185

Residual standard error: 0.3858 on 70 degrees of freedom
Multiple R-Squared: 0.8442
F-statistic: 126.4 on 3 and 70 degrees of freedom, the p-value is 0

Correlation of Coefficients:
               (Intercept) log10(1 + SV) I(RD^2)
log10(1 + SV) -0.8506
     I(RD^2) -0.2268         0.0134
   I(CP^0.5)  0.3000        -0.6496        0.0270
> print(anova(lm2))
Analysis of Variance Table

Response: PSI

Terms added sequentially (first to last)
              Df Sum of Sq  Mean Sq  F Value      Pr(F)
log10(1 + SV)  1  53.65053 53.65053 360.5376 0.0000000
I(RD^2)        1   2.55490  2.55490  17.1692 0.0000943
I(CP^0.5)      1   0.22942  0.22942   1.5418 0.2185019
Residuals     70  10.41649  0.14881
> detach(2)
sink()
```