R Output

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Dataset Variables

Dependent Variable:

X1 – Annual Sales in $1000

Independent Variables:

X2 – Number of sq. ft./1000

X3 – Inventory/$1000

X4 – Amount spent on advertizing/$1000

X5 – Size of sales district/1000 families

X6 – Number of competing stores in district

Partial residual plots are not included in the R output. See the SAS output for partial residual plots.

All Green Franchise Dataset

	x1	x2	x3	x4	x5	x6
1	231.0	3.0	294	8.2	8.2	11
2	156.0	2.2	232	7.0	4.1	12
3	10.0	0.5	149	3.0	4.3	15
4	519.0	5.5	600	12.0	16.1	1
5	437.0	4.4	567	10.6	14.1	5
6	487.0	4.8	571	11.8	12.7	4
7	299.0	3.1	512	8.1	10.1	10
8	195.0	2.5	347	7.7	8.4	12
9	20.0	1.2	212	3.3	2.1	15
10	68.0	0.6	102	4.9	4.7	8
11	570.0	5.4	788	17.4	12.3	1
12	428.0	4.2	577	10.5	14.0	7
13	464.0	4.7	535	11.3	15.0	3
14	15.0	0.6	163	2.5	2.5	14
15	65.0	1.2	168	4.7	3.3	11
16	98.0	1.6	151	4.6	2.7	10
17	398.0	4.3	342	5.5	16.0	4
18	161.0	2.6	196	7.2	6.3	13
19	397.0	3.8	453	10.4	13.9	7
20	497.0	5.3	518	11.5	16.3	1
21	528.0	5.6	615	12.3	16.0	0
22	99.0	0.8	278	2.8	6.5	14
23	0.5	1.1	142	3.1	1.6	12
24	347.0	3.6	461	9.6	11.3	6
25	341.0	3.5	382	9.8	11.5	5
26	507.0	5.1	590	12.0	15.7	0
27	400.0	8.6	517	7.0	12.0	8

All Subsets Regression Output from leaps function

```
  x2 x3 x4 x5 x6   adjrsq
1  0  0  0  1  0 0.9058918
1  0  1  0  0  0 0.8897362
1  0  0  1  0  0 0.8280809
1  0  0  0  0  1 0.8254622
1  1  0  0  0  0 0.7913767
2  0  0  1  1  0 0.9733426
2  0  1  0  1  0 0.9651250
2  0  1  0  0  1 0.9540929
2  1  0  0  1  0 0.9347305
2  0  0  0  1  1 0.9325240
2  1  0  1  0  0 0.9299635
2  1  1  0  0  0 0.9200966
2  1  0  0  0  1 0.9183479
2  0  1  1  0  0 0.9049233
2  0  0  1  0  1 0.8977224
3  1  0  1  1  0 0.9867823
3  0  1  1  1  0 0.9798535
3  0  1  0  1  1 0.9789377
3  0  0  1  1  1 0.9745656
3  1  1  0  1  0 0.9702076
3  1  1  0  0  1 0.9674330
3  1  0  0  1  1 0.9558024
3  1  0  1  0  1 0.9549161
3  0  1  1  0  1 0.9529546
3  1  1  1  0  0 0.9413677
4  1  0  1  1  1 0.9884826
4  1  1  1  1  0 0.9882952
4  0  1  1  1  1 0.9840140
4  1  1  0  1  1 0.9839858
4  1  1  1  0  1 0.9693779
5  1  1  1  1  1 0.9916350
```

```
Model 1 :    x1 ~ x5

Call:
lm(formula = modelstring[i], data = franchise)

Residuals:
     Min       1Q   Median       3Q      Max 
-113.340  -20.147   -2.385    6.289  190.510 

Coefficients:
            Estimate Std. Error t value Pr(>|t|)    
(Intercept)  -58.823     24.563  -2.395   0.0244 *  
x5            35.635      2.248  15.852  1.5e-14 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 58.92 on 25 degrees of freedom
Multiple R-squared:  0.9095,  Adjusted R-squared:  0.9059 
F-statistic: 251.3 on 1 and 25 DF,  p-value: 1.496e-14

Influence measures of
       lm(formula = modelstring[i], data = franchise) :

     dfb.1_    dfb.x5    dffit cov.r   cook.d    hat inf
1  -0.00576  0.002354 -0.00830 1.130 3.58e-05 0.0403
2   0.35719 -0.274045  0.36904 1.047 6.67e-02 0.0826
3  -0.43352  0.328706 -0.45008 0.978 9.61e-02 0.0794
4  -0.00966  0.018443  0.02347 1.201 2.87e-04 0.0968
5   0.00712 -0.019850 -0.03017 1.160 4.74e-04 0.0653
6  -0.02235  0.198098  0.38682 0.914 6.97e-02 0.0502
```

```
7  -0.00271 -0.000562 -0.00698 1.127 2.54e-05 0.0373
8  -0.10580  0.039352 -0.15852 1.074 1.28e-02 0.0395
9   0.02610 -0.021865  0.02625 1.234 3.59e-04 0.1210
10 -0.19009  0.140452 -0.19965 1.123 2.03e-02 0.0733
11  0.00262  0.441443  0.96131 0.359 2.70e-01 0.0469   *
12  0.01222 -0.035275 -0.05432 1.155 1.53e-03 0.0640
13  0.01918 -0.042788 -0.05903 1.173 1.81e-03 0.0780
14 -0.09517  0.078599 -0.09600 1.215 4.79e-03 0.1123
15  0.03499 -0.027963  0.03562 1.200 6.60e-04 0.0965
16  0.37695 -0.308958  0.38095 1.104 7.20e-02 0.1082
17  0.28381 -0.547986 -0.70166 0.839 2.14e-01 0.0950
18 -0.01675  0.010645 -0.01907 1.146 1.89e-04 0.0538
19  0.03791 -0.113627 -0.17739 1.114 1.61e-02 0.0628
20  0.06263 -0.117143 -0.14737 1.187 1.12e-02 0.1006
21 -0.03822  0.073801  0.09450 1.190 4.63e-03 0.0950
22 -0.26376  0.163181 -0.30511 0.998 4.53e-02 0.0519
23  0.01604 -0.013653  0.01609 1.250 1.35e-04 0.1324   *
24  0.00188  0.003345  0.01102 1.131 6.32e-05 0.0408
25 -0.00480 -0.011953 -0.03543 1.130 6.53e-04 0.0418
26 -0.01328  0.026596  0.03473 1.191 6.28e-04 0.0896
27  0.00587  0.048105  0.11564 1.109 6.88e-03 0.0448
Potentially influential observations of
       lm(formula = modelstring[i], data = franchise) :

   dfb.1_ dfb.x5 dffit   cov.r   cook.d hat
11  0.00   0.44   0.96_*  0.36_*  0.27   0.05
23  0.02  -0.01   0.02    1.25_*  0.00   0.13
        dfb.1_      dfb.x5      dffit     cov.r       cook.d        hat
11 0.002616897  0.44144273 0.96130896 0.3585676 0.2701114060 0.04693424
23 0.016039642 -0.01365312 0.01608797 1.2504449 0.0001347941 0.13237594
```

```
Model 2 :    x1 ~ x4 + x5

Call:
lm(formula = modelstring[i], data = franchise)

Residuals:
    Min      1Q  Median      3Q     Max
-53.049 -19.185  -0.768  13.547  83.910

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) -111.541     14.634  -7.622 7.35e-08 ***
x4            21.517      2.684   8.016 3.05e-08 ***
x5            23.084      1.971  11.715 2.05e-11 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 31.36 on 24 degrees of freedom
Multiple R-squared:  0.9754,  Adjusted R-squared:  0.9733
F-statistic: 475.7 on 2 and 24 DF,  p-value: < 2.2e-16

Influence measures of
       lm(formula = modelstring[i], data = franchise) :

      dfb.1_    dfb.x4    dfb.x5    dffit cov.r   cook.d    hat inf
1  -6.71e-02 -0.063654  0.077169 -0.16696 1.109 9.46e-03 0.0471
2   1.32e-01  0.147220 -0.220209  0.27220 1.197 2.52e-02 0.1167
3  -4.91e-01  0.259079 -0.012771 -0.50669 0.976 8.17e-02 0.1075
4  -2.83e-03  0.000319  0.003230  0.00731 1.258 1.86e-05 0.0970
5   8.58e-03  0.001073 -0.018012 -0.04296 1.211 6.41e-04 0.0654
6  -1.60e-01  0.309079 -0.116054  0.51871 0.835 8.22e-02 0.0778
7   7.68e-03 -0.002079  0.002601  0.01954 1.179 1.33e-04 0.0377
8  -1.94e-01 -0.055294  0.099157 -0.37052 0.795 4.18e-02 0.0404
9   1.39e-01 -0.013807 -0.064698  0.15026 1.267 7.80e-03 0.1220
10 -2.88e-01  0.029745  0.114233 -0.32414 1.038 3.46e-02 0.0739
11 -4.34e-01  0.967152 -0.680700  1.01710 1.942 3.44e-01 0.4899   *
12  1.48e-02  0.003182 -0.034445 -0.08101 1.199 2.27e-03 0.0641
```

```
13  4.01e-02 -0.004057 -0.054768 -0.13183 1.200 5.99e-03 0.0781
14  1.90e-01 -0.065171 -0.038299  0.19257 1.259 1.28e-02 0.1269
15 -6.91e-03 -0.000739  0.004523 -0.00829 1.259 2.39e-05 0.0973
16  4.82e-01  0.088391 -0.361098  0.59725 0.898 1.10e-01 0.1106
17  1.47e-01 -0.605769  0.645909  0.69815 1.669 1.64e-01 0.3842   *
18 -1.33e-01 -0.086753  0.143012 -0.23520 1.089 1.86e-02 0.0623
19  5.18e-02  0.016761 -0.134194 -0.31125 1.010 3.17e-02 0.0630
20  5.46e-02  0.020796 -0.097752 -0.16959 1.225 9.89e-03 0.1021
21 -2.51e-02  0.008472  0.021232  0.05958 1.253 1.23e-03 0.0969
22  2.74e-03 -0.002622  0.001425  0.00331 1.319 3.82e-06 0.1387
23  1.02e-01 -0.007349 -0.050976  0.11051 1.297 4.23e-03 0.1330
24 -2.69e-03 -0.013873  0.000221 -0.06021 1.175 1.26e-03 0.0431
25 -1.36e-05 -0.043290  0.001416 -0.16675 1.102 9.43e-03 0.0448
26  8.41e-03 -0.002406 -0.008063 -0.02159 1.249 1.62e-04 0.0907
27  3.64e-01 -0.735006  0.771383  1.04428 0.379 2.55e-01 0.0888   *
Potentially influential observations of
       lm(formula = modelstring[i], data = franchise) :

   dfb.1_ dfb.x4 dfb.x5 dffit cov.r   cook.d hat
11 -0.43   0.97  -0.68   1.02  1.94_*  0.34   0.49_*
17  0.15  -0.61   0.65   0.70  1.67_*  0.16   0.38_*
27  0.36  -0.74   0.77   1.04  0.38_*  0.26   0.09
       dfb.1_     dfb.x4     dfb.x5     dffit     cov.r    cook.d       hat
11 -0.4338694  0.9671521 -0.6807000 1.0170959 1.9417722 0.3437252 0.4899318
17  0.1468167 -0.6057692  0.6459094 0.6981545 1.6691257 0.1639678 0.3841984
27  0.3639505 -0.7350055  0.7713832 1.0442783 0.3793807 0.2551219 0.0887575
Variance Inflation Factors
      x4       x5
2.712571 2.712571
```

```
Model 3 :    x1 ~ x2 + x4 + x5

Call:
lm(formula = modelstring[i], data = franchise)

Residuals:
    Min      1Q  Median      3Q     Max
-43.935 -13.185   0.642  11.456  46.196

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) -108.587     10.321 -10.521 2.91e-10 ***
x2            20.536      4.074   5.040 4.22e-05 ***
x4            19.072      1.951   9.773 1.18e-09 ***
x5            17.777      1.742  10.206 5.19e-10 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 22.08 on 23 degrees of freedom
Multiple R-squared:  0.9883,  Adjusted R-squared:  0.9868
F-statistic:   648 on 3 and 23 DF,  p-value: < 2.2e-16

Influence measures of
       lm(formula = modelstring[i], data = franchise) :

      dfb.1_    dfb.x2    dfb.x4   dfb.x5    dffit cov.r   cook.d    hat inf
1  -0.101362 -0.010306 -0.090137  0.09866 -0.25124 1.001 1.56e-02 0.0472
2   0.112757  0.055199  0.105059 -0.17950  0.23337 1.271 1.40e-02 0.1236
3  -0.412177  0.203234  0.166323 -0.13164 -0.48274 1.046 5.69e-02 0.1306
4   0.002563 -0.000215 -0.000229 -0.00222 -0.00667 1.323 1.16e-05 0.0971
5  -0.006279 -0.007664  0.001197  0.01443  0.03031 1.281 2.40e-04 0.0698
6  -0.208415  0.118311  0.372742 -0.19571  0.70679 0.514 1.04e-01 0.0801
7   0.033406 -0.028029 -0.002220  0.02640  0.09348 1.201 2.26e-03 0.0414
8  -0.225943  0.184758 -0.111460 -0.01505 -0.48948 0.565 5.13e-02 0.0471
9   0.061076  0.014063 -0.009301 -0.03087  0.06671 1.362 1.16e-03 0.1277
10 -0.147384  0.124604 -0.015502 -0.02642 -0.21416 1.259 1.18e-02 0.1118
11 -0.454762  0.083379  0.972978 -0.62562  1.08213 1.903 2.90e-01 0.4929   *
12 -0.002974 -0.005552  0.000828  0.00828  0.01556 1.289 6.32e-05 0.0735
```

```
13  0.026221  0.020600 -0.007582 -0.03977 -0.08506 1.284 1.88e-03 0.0830
14  0.345339 -0.036571 -0.106658 -0.03384  0.35501 1.176 3.17e-02 0.1282
15  0.008155 -0.000399  0.000948 -0.00403  0.00983 1.323 2.53e-05 0.0975
16  0.565454  0.190130  0.051320 -0.44621  0.71361 0.721 1.14e-01 0.1191
17  0.283041 -0.142722 -1.129931  1.10830  1.39404 1.160 4.46e-01 0.3883   *
18 -0.237078 -0.079009 -0.128088  0.24806 -0.42100 0.821 4.15e-02 0.0645
19  0.045136  0.144797 -0.024419 -0.16382 -0.26515 1.155 1.78e-02 0.0898
20  0.063937  0.015622  0.019433 -0.09959 -0.19693 1.253 9.98e-03 0.1028
21 -0.016319  0.003358  0.004568  0.00911  0.03937 1.320 4.05e-04 0.0976
22  0.364544 -0.242520 -0.290420  0.30338  0.51798 1.166 6.64e-02 0.1776
23 -0.018675 -0.004685  0.002458  0.01021 -0.02061 1.389 1.11e-04 0.1402
24 -0.000635  0.006341 -0.006559 -0.00377 -0.02321 1.250 1.41e-04 0.0466
25  0.003325  0.058758 -0.048855 -0.03460 -0.14832 1.176 5.65e-03 0.0532
26 -0.016889 -0.006309  0.006156  0.01646  0.04296 1.312 4.82e-04 0.0927
27 -0.893055 -5.144382  2.456598  2.09333 -5.42655 4.831 6.47e+00 0.8763   *
Potentially influential observations of
       lm(formula = modelstring[i], data = franchise) :

   dfb.1_ dfb.x2  dfb.x4  dfb.x5  dffit   cov.r   cook.d  hat
11 -0.45   0.08    0.97   -0.63    1.08    1.90_*  0.29    0.49_*
17  0.28  -0.14   -1.13_*  1.11_*  1.39_*  1.16    0.45    0.39
27 -0.89  -5.14_*  2.46_*  2.09_* -5.43_*  4.83_*  6.47_*  0.88_*
       dfb.1_      dfb.x2     dfb.x4     dfb.x5     dffit    cov.r    cook.d
11 -0.4547624  0.08337927  0.9729776 -0.6256234  1.082131 1.903090 0.2901662
17  0.2830408 -0.14272236 -1.1299311  1.1082985  1.394038 1.159579 0.4458664
27 -0.8930552 -5.14438159  2.4565983  2.0933314 -5.426547 4.830521 6.4730336
         hat
11 0.4928578
17 0.3882681
27 0.8762660
Variance Inflation Factors
      x2       x4       x5
3.580261 2.891348 4.274346
```

```
Model 4 :    x1 ~ x2 + x4 + x5 + x6

Call:
lm(formula = modelstring[i], data = franchise)

Residuals:
    Min      1Q  Median      3Q     Max
-30.340 -12.716  -6.497  15.715  45.311

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  -39.568     34.301  -1.154   0.2611
x2            20.411      3.804   5.366 2.18e-05 ***
x4            16.954      2.083   8.140 4.42e-08 ***
x5            15.702      1.904   8.248 3.54e-08 ***
x6            -4.047      1.930  -2.097   0.0478 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 20.61 on 22 degrees of freedom
Multiple R-squared:  0.9903,  Adjusted R-squared:  0.9885
F-statistic: 558.9 on 4 and 22 DF,  p-value: < 2.2e-16

Influence measures of
       lm(formula = modelstring[i], data = franchise) :

     dfb.1_   dfb.x2   dfb.x4    dfb.x5   dfb.x6   dffit cov.r   cook.d    hat
1   0.15135 -0.00942 -0.13653 -0.037661 -0.17682 -0.2397 1.252 0.011764 0.1035
2  -0.01988  0.07539  0.15541 -0.172667  0.06518  0.3211 1.231 0.020913 0.1289
3   0.07295  0.15745  0.03169 -0.177574 -0.17107 -0.4171 1.204 0.034900 0.1570
4  -0.02763 -0.00254  0.01637 -0.007195  0.03985 -0.1061 1.393 0.002349 0.1130
5  -0.02802 -0.01984  0.01457  0.045173  0.02435  0.0836 1.339 0.001458 0.0763
6  -0.01014  0.12595  0.32289 -0.207707 -0.05482  0.7597 0.351 0.092029 0.0805
7  -0.21342 -0.06108  0.11430  0.179673  0.24502  0.3270 1.098 0.021361 0.0945
```

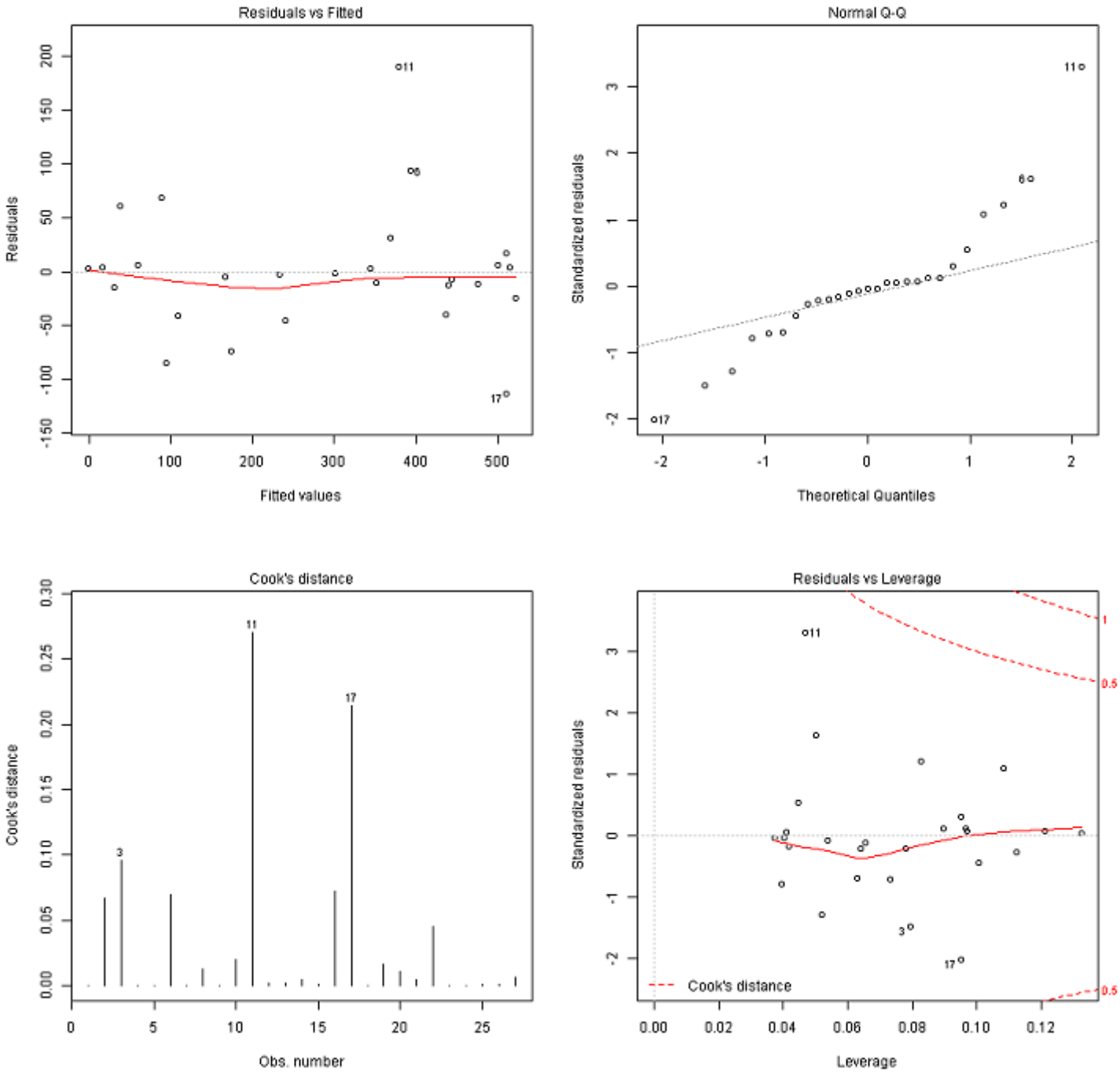
```
8   0.49024  0.13777 -0.35048 -0.303170 -0.56329 -0.6843 0.801 0.086787 0.1461
9   0.00799  0.02874 -0.00297 -0.038692  0.02765  0.1371 1.414 0.003916 0.1331
10 -0.85334  0.39811  0.32424  0.322938  0.75541 -1.0057 0.883 0.185966 0.2565
11 -0.05895  0.07841  0.77908 -0.543122 -0.06538  1.0331 1.940 0.212597 0.4948
12 -0.17944 -0.06357  0.09426  0.176341  0.17657  0.2564 1.333 0.013515 0.1398
13 -0.00089  0.02671 -0.00330 -0.038137  0.01082 -0.1101 1.335 0.002525 0.0838
14  0.13278 -0.03613 -0.11007 -0.048983 -0.04023  0.3470 1.201 0.024298 0.1300
15 -0.09061  0.00581  0.02201  0.075420  0.06585 -0.1348 1.405 0.003785 0.1280
16  0.57294  0.13664 -0.19464 -0.534040 -0.47158  0.7175 1.026 0.098732 0.2097
17  0.36754 -0.12177 -0.96178  0.611000 -0.31514  1.1839 1.390 0.268692 0.4179
18  0.27565 -0.06203 -0.24389 -0.023125 -0.33705 -0.4528 1.115 0.040617 0.1447
19  0.10180  0.06477 -0.05828 -0.116132 -0.10002 -0.1574 1.437 0.005155 0.1506
20 -0.10891  0.02820  0.09830 -0.066028  0.14454 -0.3575 1.163 0.025657 0.1229
21 -0.05932 -0.00840  0.02517  0.017033  0.07544 -0.1354 1.432 0.003819 0.1416
22 -0.14087 -0.36250 -0.23524  0.552926  0.30840  0.8431 0.857 0.131656 0.2050
23 -0.22448 -0.05580  0.10717  0.194922  0.16575 -0.3058 1.440 0.019251 0.1985
24 -0.00181  0.00830 -0.00669 -0.003344  0.00164 -0.0303 1.318 0.000192 0.0467
25 -0.07246  0.08260 -0.02193 -0.000968  0.07685 -0.2194 1.128 0.009738 0.0606
26 -0.08266  0.02034  0.03288  0.010637  0.10083 -0.1628 1.434 0.005511 0.1504
27  0.23032 -4.16323  1.51725  1.209985 -0.45116 -4.4078 6.268 3.635985 0.8855
   inf
1
2
3
4
5
6
7
8
9
10
11   *
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27   *
Potentially influential observations of
       lm(formula = modelstring[i], data = franchise) :

   dfb.1_ dfb.x2  dfb.x4  dfb.x5  dfb.x6 dffit   cov.r   cook.d  hat
11 -0.06   0.08    0.78   -0.54   -0.07   1.03    1.94_*  0.21    0.49
27  0.23  -4.16_*  1.52_*  1.21_* -0.45  -4.41_*  6.27_*  3.64_*  0.89_*
       dfb.1_      dfb.x2    dfb.x4    dfb.x5      dfb.x6     dffit    cov.r
11 -0.0589532  0.07840629 0.7790774 -0.543122 -0.06538175  1.033108 1.939758
27  0.2303199 -4.16322898 1.5172500  1.209985 -0.45116264 -4.407798 6.267623
     cook.d       hat
11 0.212597 0.4948398
27 3.635985 0.8855435
Variance Inflation Factors
      x2       x4       x5       x6
3.581144 3.779991 5.859361 5.465145
```

```
Model 5 :    x1 ~ x2 + x3 + x4 + x5 + x6

Call:
lm(formula = modelstring[i], data = franchise)
```

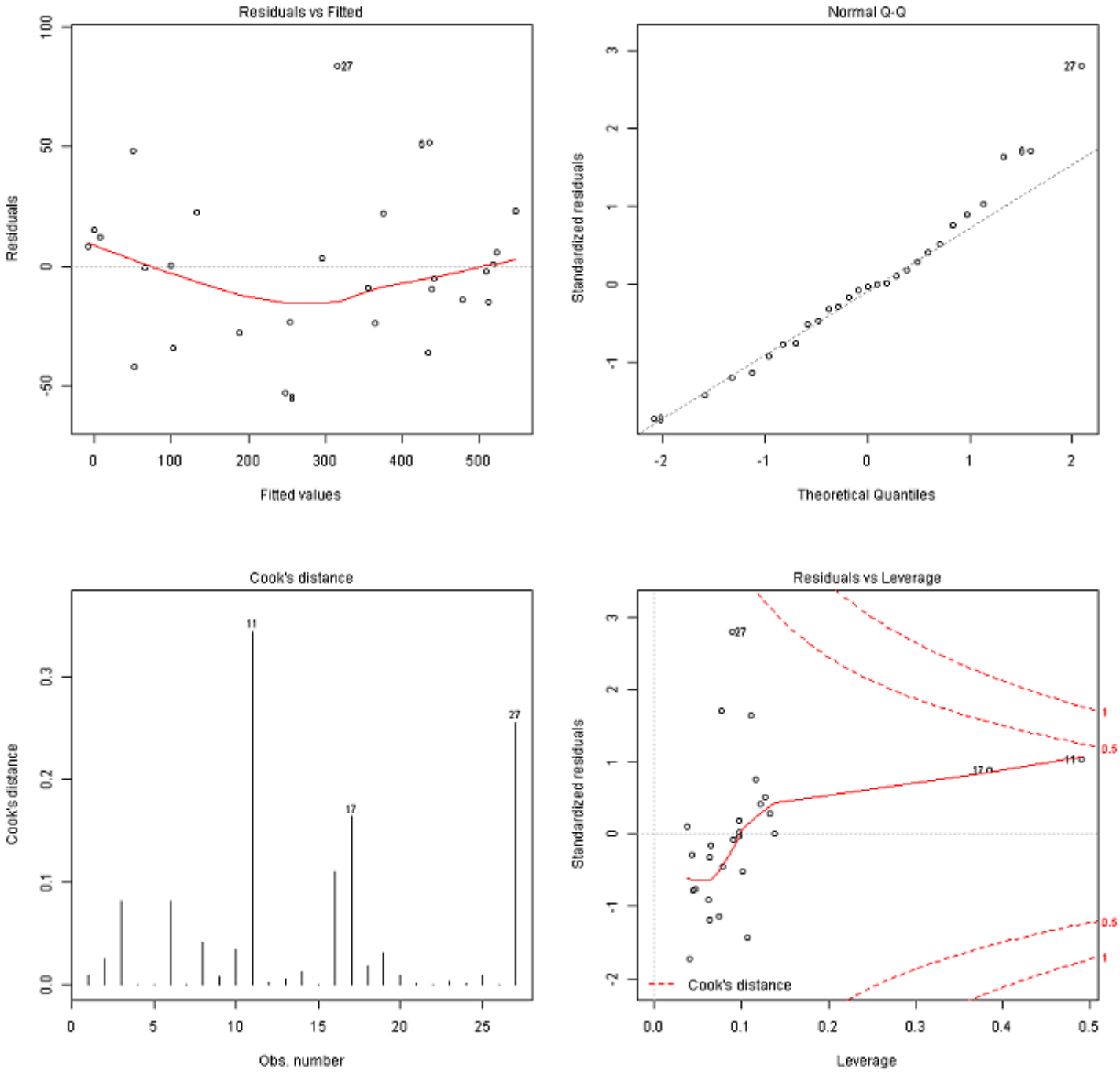
```
Residuals:
    Min      1Q  Median      3Q     Max 
-26.317  -9.711  -4.361   4.051  41.163 

Coefficients:
             Estimate Std. Error t value Pr(>|t|)    
(Intercept) -19.10325   29.99365  -0.637 0.531066    
x2           16.17775    3.52663   4.587 0.000160 ***
x3            0.17444    0.05723   3.048 0.006110 ** 
x4           11.53991    2.51120   4.595 0.000157 ***
x5           13.60085    1.76268   7.716 1.46e-07 ***
x6           -5.30493    1.69599  -3.128 0.005085 ** 
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 17.57 on 21 degrees of freedom
Multiple R-squared:  0.9932,	Adjusted R-squared:  0.9916 
F-statistic: 617.4 on 5 and 21 DF,  p-value: < 2.2e-16

Influence measures of
	 lm(formula = modelstring[i], data = franchise) :

     dfb.1_   dfb.x2   dfb.x3   dfb.x4   dfb.x5   dfb.x6   dffit cov.r   cook.d
1  -0.04589  0.02278 -0.05277  0.05962  0.02864  0.05246  0.0765 1.658 0.001023
2  -0.11794  0.28066 -0.34688  0.47374 -0.19475  0.21585  0.7523 0.713 0.086544
3   0.08409  0.17500 -0.00449  0.02998 -0.19387 -0.19751 -0.4993 1.078 0.040886
4  -0.04498  0.00281 -0.01622  0.02924 -0.00382  0.06328 -0.1637 1.422 0.004641
5   0.00566  0.01099 -0.01329  0.00615 -0.00794 -0.00423 -0.0296 1.478 0.000153
6   0.04045  0.03774  0.22957  0.09021 -0.30134 -0.11472  0.8715 0.194 0.094876
7  -0.00701 -0.01162  0.02142 -0.01057  0.00101  0.00827  0.0283 1.717 0.000140
8   0.52298  0.07585  0.13852 -0.35306 -0.34147 -0.59626 -0.7180 0.704 0.078856
9  -0.01994  0.00359 -0.06176  0.04533  0.05209 -0.00601 -0.1240 1.594 0.002683
10 -0.56577  0.15922  0.30388 -0.04030  0.10768  0.48440 -0.8245 1.198 0.110090
11  0.00350 -0.00992  0.04895  0.03682 -0.08399 -0.02014  0.1427 3.037 0.003560
12 -0.05953 -0.03943  0.04170 -0.00326  0.04761  0.05729  0.1092 1.573 0.002082
13  0.00246  0.01321  0.01393 -0.01163 -0.03217  0.00460 -0.0850 1.433 0.001260
14  0.08685 -0.05314  0.09172 -0.10476 -0.05897 -0.04232  0.2001 1.510 0.006937
15 -0.07845  0.00100  0.00983  0.00726  0.05955  0.05594 -0.1235 1.492 0.002656
16  0.74158  0.22284 -0.12617 -0.10043 -0.62829 -0.59988  0.9971 0.620 0.147009
17  0.52095 -0.04111 -0.37573 -0.88253  1.09679 -0.42486  2.0347 0.559 0.569825
18 -0.11626  0.08148 -0.16405  0.16708  0.07045  0.13671  0.2119 2.049 0.007824
19 -0.07345 -0.01683 -0.05159  0.06220  0.08686  0.07308  0.1109 1.633 0.002147
20 -0.03903 -0.02620  0.10536 -0.03354 -0.07705  0.05706 -0.2357 1.445 0.009577
21 -0.11999  0.00455 -0.04856  0.06794  0.04858  0.14993 -0.2601 1.397 0.011608
22  0.00542 -0.27542  0.30797 -0.29477  0.11502  0.06343  0.4970 1.735 0.042178
23 -0.41468 -0.04316 -0.12116  0.21989  0.36517  0.31427 -0.5551 1.204 0.050949
24 -0.00684  0.02184 -0.01350 -0.00070 -0.00139  0.00673 -0.0671 1.372 0.000784
25 -0.01233  0.00100  0.08001 -0.06324 -0.03167  0.01244 -0.1234 1.439 0.002647
26 -0.15700  0.05494 -0.05412  0.08007  0.03877  0.18905 -0.2977 1.376 0.015141
27  0.27604 -5.14107 -0.12711  1.54470  1.56036 -0.56266 -5.9805 3.389 5.087730
      hat inf
1  0.1975
2  0.1637
3  0.1570
4  0.1142
5  0.0956
6  0.0865
7  0.2204
8  0.1517
9  0.1769
10 0.2968
11 0.5608   *
12 0.1636
13 0.0861
14 0.1646
15 0.1288
16 0.2131
17 0.4326   *
```

```
18 0.3614   *
19 0.1922
20 0.1535
21 0.1467
22 0.3328
23 0.2084
24 0.0487
25 0.1046
26 0.1556
27 0.8859   *
Potentially influential observations of
       lm(formula = modelstring[i], data = franchise) :

   dfb.1_ dfb.x2  dfb.x3 dfb.x4  dfb.x5  dfb.x6 dffit   cov.r   cook.d  hat
11  0.00  -0.01    0.05   0.04   -0.08   -0.02   0.14    3.04_*  0.00    0.56
17  0.52  -0.04   -0.38  -0.88    1.10_* -0.42   2.03_*  0.56    0.57    0.43
18 -0.12   0.08   -0.16   0.17    0.07    0.14   0.21    2.05_*  0.01    0.36
27  0.28  -5.14_* -0.13   1.54_*  1.56_* -0.56  -5.98_*  3.39_*  5.09_*  0.89_*
         dfb.1_       dfb.x2      dfb.x3      dfb.x4      dfb.x5     dfb.x6
11  0.003502543 -0.009923318  0.04894507  0.03681637 -0.08398549 -0.0201388
17  0.520945030 -0.041110988 -0.37573456 -0.88252676  1.09679217 -0.4248556
18 -0.116260554  0.081478819 -0.16404964  0.16708071  0.07044565  0.1367124
27  0.276043584 -5.141065332 -0.12711492  1.54469956  1.56036289 -0.5626575
        dffit    cov.r      cook.d       hat
11  0.1426786 3.036938 0.003559668 0.5608390
17  2.0347257 0.559011 0.569825174 0.4326300
18  0.2118585 2.049364 0.007823686 0.3614347
27 -5.9804711 3.389284 5.087729956 0.8859437
Variance Inflation Factors
       x2        x3        x4        x5        x6
 4.238298 10.085087  7.565540  6.916842  5.809242
```

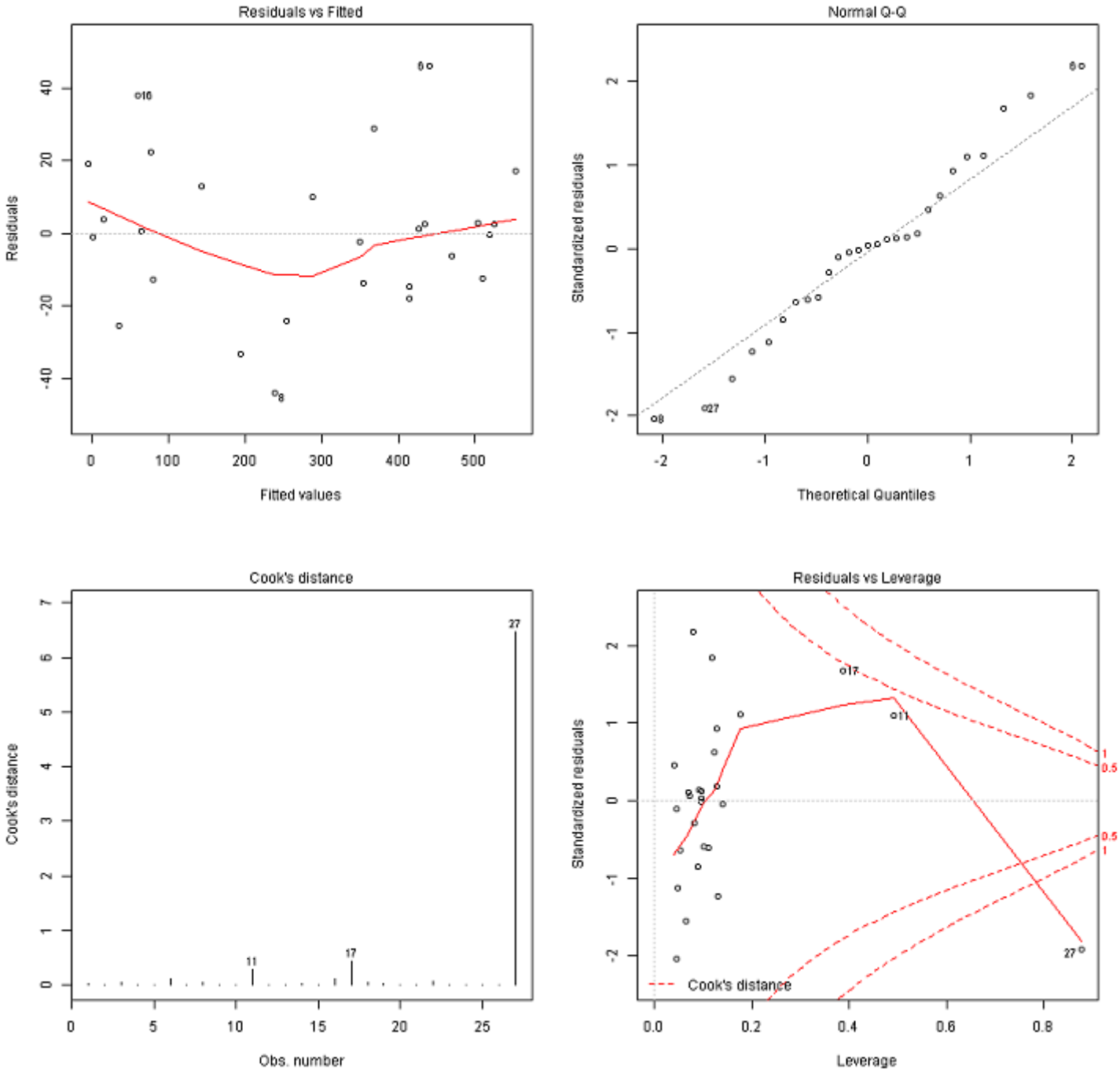
R Diagnostic Plots Model 1: x2 ~ x5



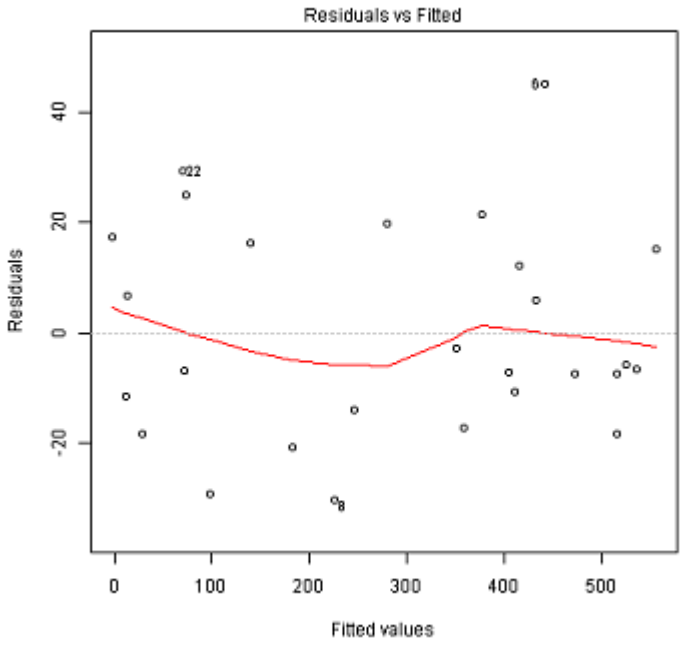
R Diagnostic Plots Model 2: x1 ~ x4 + x5

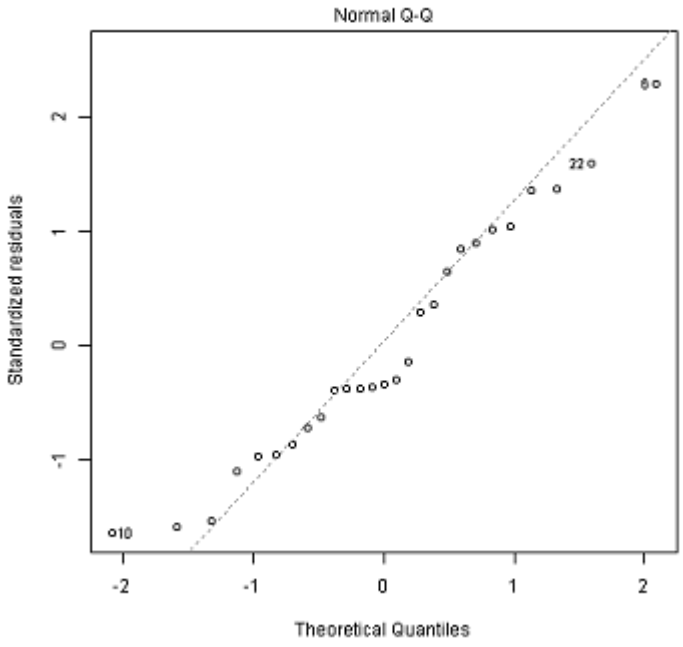


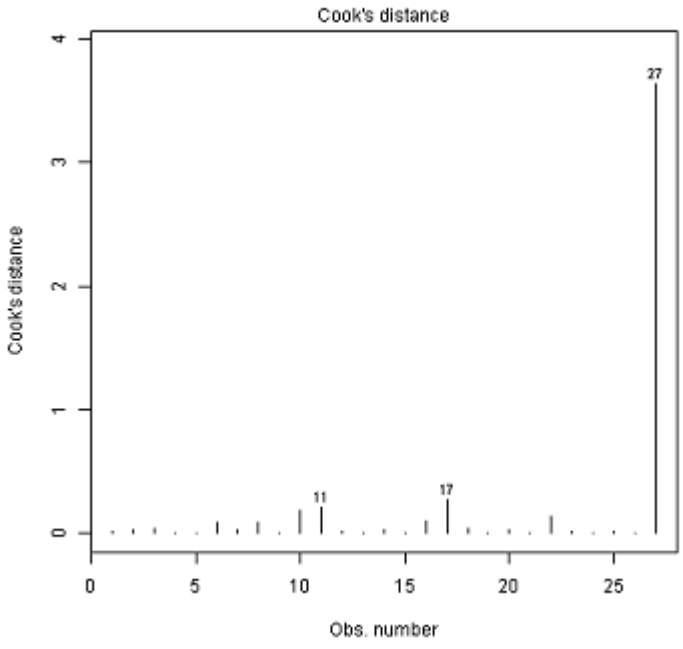
R Diagnostic Plots Model 3: x1 ~ x2 + x4 + x5

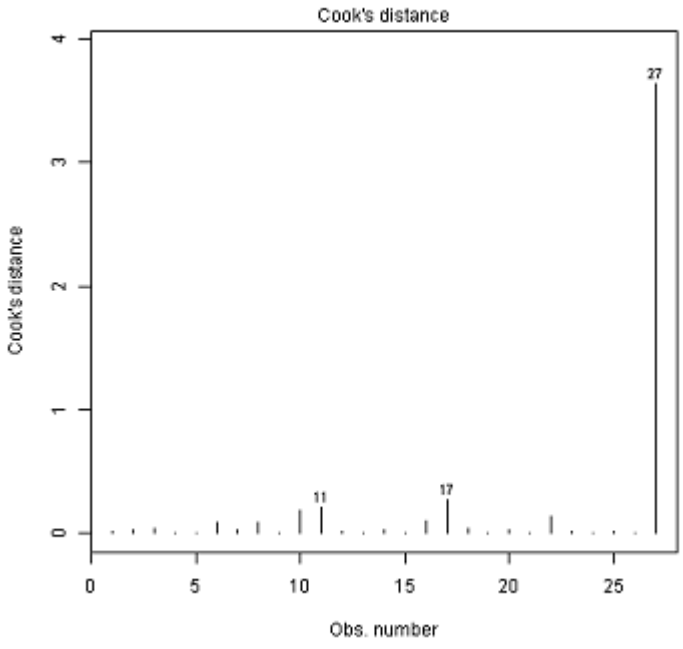
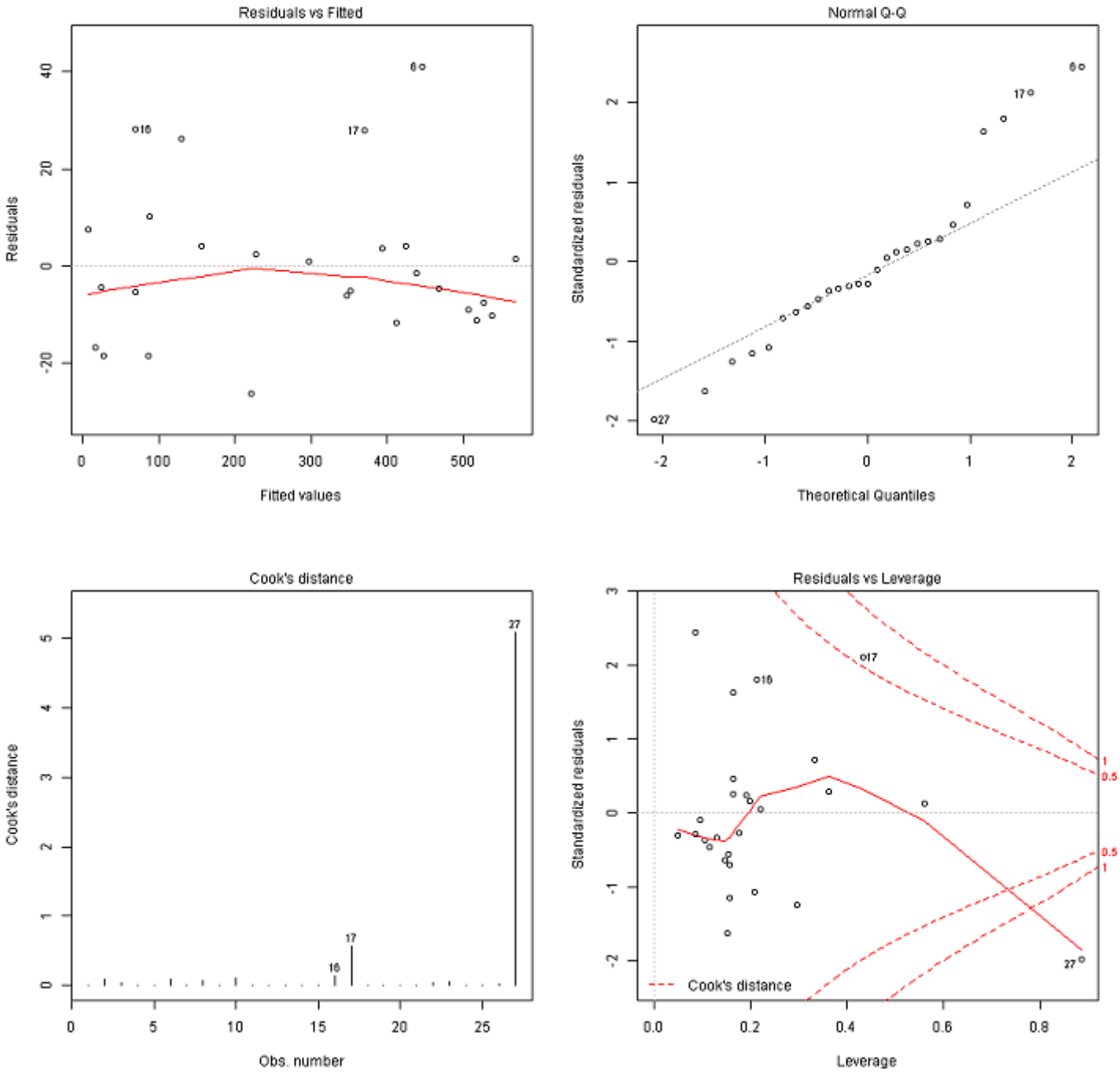


R Diagnostic Plots Model 4: x1 ~ x2 + x4 + x5 + x6









R Diagnostic Plots Model 5: x1 ~ x2 + x3 + x4 + x5