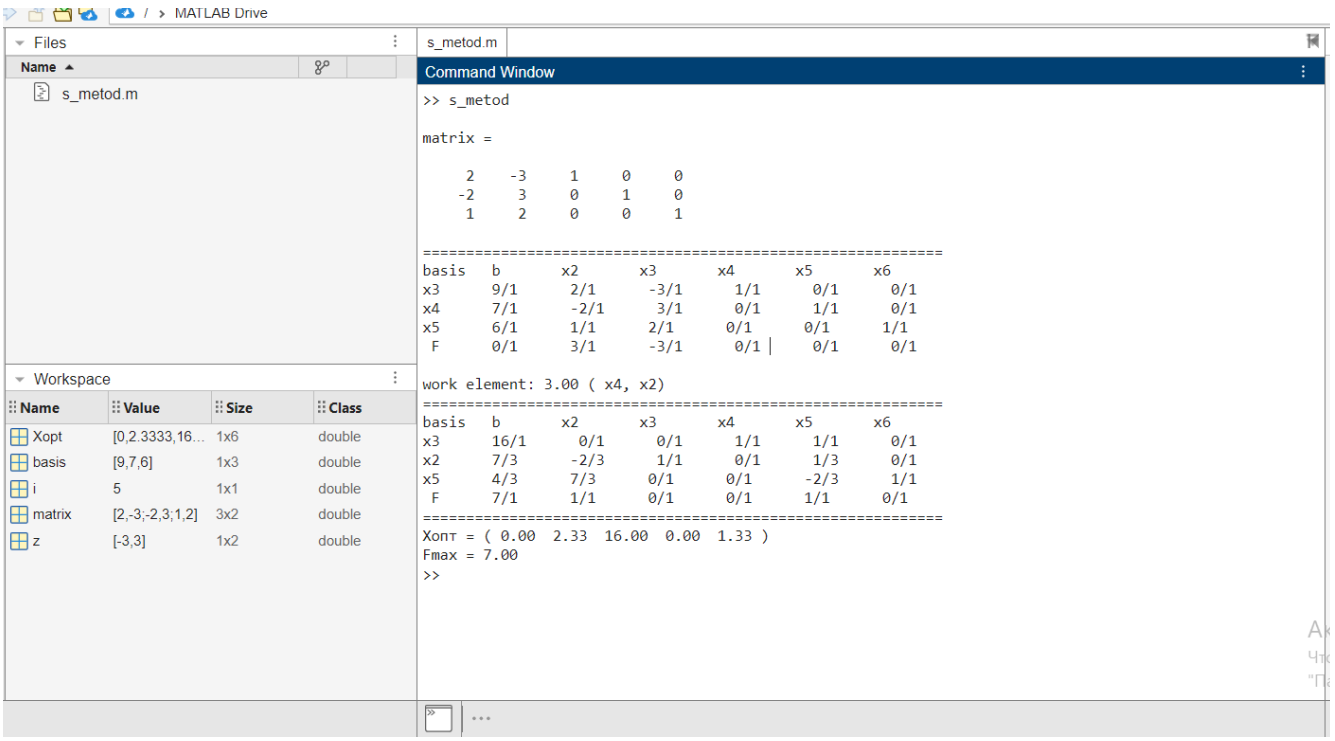
```
z = [-3, 3];
matrix = [2, -3;
          -2, 3;
          1, 2];
basis = [9, 7, 6];
Xopt = symplexMethod(z, matrix, basis);
fprintf("=============================================================\n");
fprintf("Хопт = (");
for i = 1:length(Xopt) - 1
   fprintf(" %.2f ", Xopt(i));
end
fprintf(")\n");
fprintf("Fmax = %.2f", Xopt(end));
function Xopt = symplexMethod(z, CO, b)

   A = ones(1, size(CO, 1));
   y = diag(A);
   matrix = horzcat(CO, y)
   i = 1;
   baze = [];
   while i <= length(z) + 1
       baze = [baze, i + size(CO, 2)];
       i = i + 1;
   end
   matrix = [b' matrix];
   Zrow = [0, -z, zeros(1, size(CO, 1))];
   counter = 0;
   while true
       printTable(baze, matrix, Zrow);
       counter = counter + 1;
       if counter == 5
           break;
       end
       if all(Zrow >= 0)
           break;
       end
       [~, C] = min(Zrow(2:length(Zrow)));
       C = C + 1;
       i = 1;
       k = [];
       while i <= size(matrix, 1)
           if matrix(i, 1) >= 0 && matrix(i, C) >= 0
               k = [k matrix(i, 1) / matrix(i, C)];
           else
               k = [k 9999999];
           end
           i = i + 1;
       end
       [~, R] = min(k);
       workEl = matrix(R, C);
       fprintf("\n");
       fprintf("work element: %.2f ( x%d, x%d) \n", workEl, baze(R), C - 1);
       WC = [matrix(:, C)', Zrow(C)];
       WR = matrix(R, :);
       Zrow(C) = 0;
       matrix(:, C) = 0;
       matrix(R, :) = matrix(R, :) / workEl;
       matrix(R, C) = 1;
       baze(R) = C - 1;
       i = 1;
       ii = 1;
       while i <= length(baze)
           ii = 1;
           while ii <= length(Zrow)
```

```
                if i ~= R && ii ~= C
                    matrix(i, ii) = matrix(i, ii) - WC(i) * WR(ii) / workEl;
                end
                ii = ii + 1;
            end
            i = i + 1;
        end
        i = 1;
        while i <= length(Zrow)
            if i ~= C
                Zrow(i) = Zrow(i) - WR(i) * WC(length(WC)) / workEl;
            end
            i = i + 1;
        end
    end
    Plan = zeros(1, length(Zrow));
    i = 1;
    while i <= length(baze)
        Plan(baze(i)) = matrix(i, 1);
        i = i + 1;
    end
    Plan(end) = Zrow(1);
    Xopt = Plan;
end
function printTable(baze, matrix, z)
    fprintf("=============================================================\n");
    fprintf("basis ");
    for i = 1:length(z)
        if i == 1
            fprintf("  b    ");
        else
            fprintf("   x%i    ", i);
        end
    end
    fprintf("\n");
    for i = 1:length(baze)
        fprintf("x%i ", baze(i));
        for ii = 1:length(z)
            fprintf("     %s ", formatFraction(matrix(i, ii)));
        end
        fprintf("\n");
    end
    fprintf(" F ");
    for i = 1:length(z)
        fprintf("     %s ", formatFraction(z(i)));
    end
    fprintf("\n");
end
function fraction = formatFraction(decimal)
    [num, den] = rat(decimal);
    fraction = sprintf('%d/%d', num, den);
end
```


MATLAB Drive
Files
Name
s_metod.m
Workspace
Name
Value
Size
Class
Xopt
[0,2.3333,16...
1x6
double
basis
[9,7,6]
1x3
double
i
5
1x1
double
matrix
[2,-3;-2,3;1,2]
3x2
double
z
[-3,3]
1x2
double
s_metod.m
Command Window
>> s_metod
matrix =
2 -3 1 0 0
-2 3 0 1 0
1 2 0 0 1
basis b x2 x3 x4 x5 x6
x3 9/1 2/1 -3/1 1/1 0/1 0/1
x4 7/1 -2/1 3/1 0/1 1/1 0/1
x5 6/1 1/1 2/1 0/1 0/1 1/1
F 0/1 3/1 -3/1 0/1 0/1 0/1
work element: 3.00 (x4, x2)
basis b x2 x3 x4 x5 x6
x3 16/1 0/1 0/1 1/1 1/1 0/1
x2 7/3 -2/3 1/1 0/1 1/3 0/1
x5 4/3 7/3 0/1 0/1 -2/3 1/1
F 7/1 1/1 0/1 0/1 1/1 0/1
Xопт = (0.00 2.33 16.00 0.00 1.33)
Fmax = 7.00
>>