```
function main
    clc
    x = [0 0 0]';
    b = [9 -7 12]';
    [x, numIter] = conjGrad(@fx, x, b);
    display(x);
    display(numIter);
end

function Ax = fx(x)
    A = [3 -3 3; -3 5 1; 3 1 5];
    Ax = A*x;
end

function [x, numIter] = conjGrad(func, x, b, maxIter, epsilon)
    if nargin < 5
        epsilon = 1e-9;
    end
    if nargin < 4
        maxIter = 500;
    end
    r = b - feval(func, x);
    s = r;
    for numIter = 1:maxIter
        u = feval(func, s);
        alpha = dot(s,r)/dot(s,u);
        x = x+alpha*s;
        r = b - feval(func, x);
        if norm(r) < epsilon
            return
        end
        beta = -dot(r,u)/dot(s,u);
        s = r + beta*s;
    end
end
```

```
x =

    3.5000
    0.6667
    0.1667


numIter =

     3
```

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