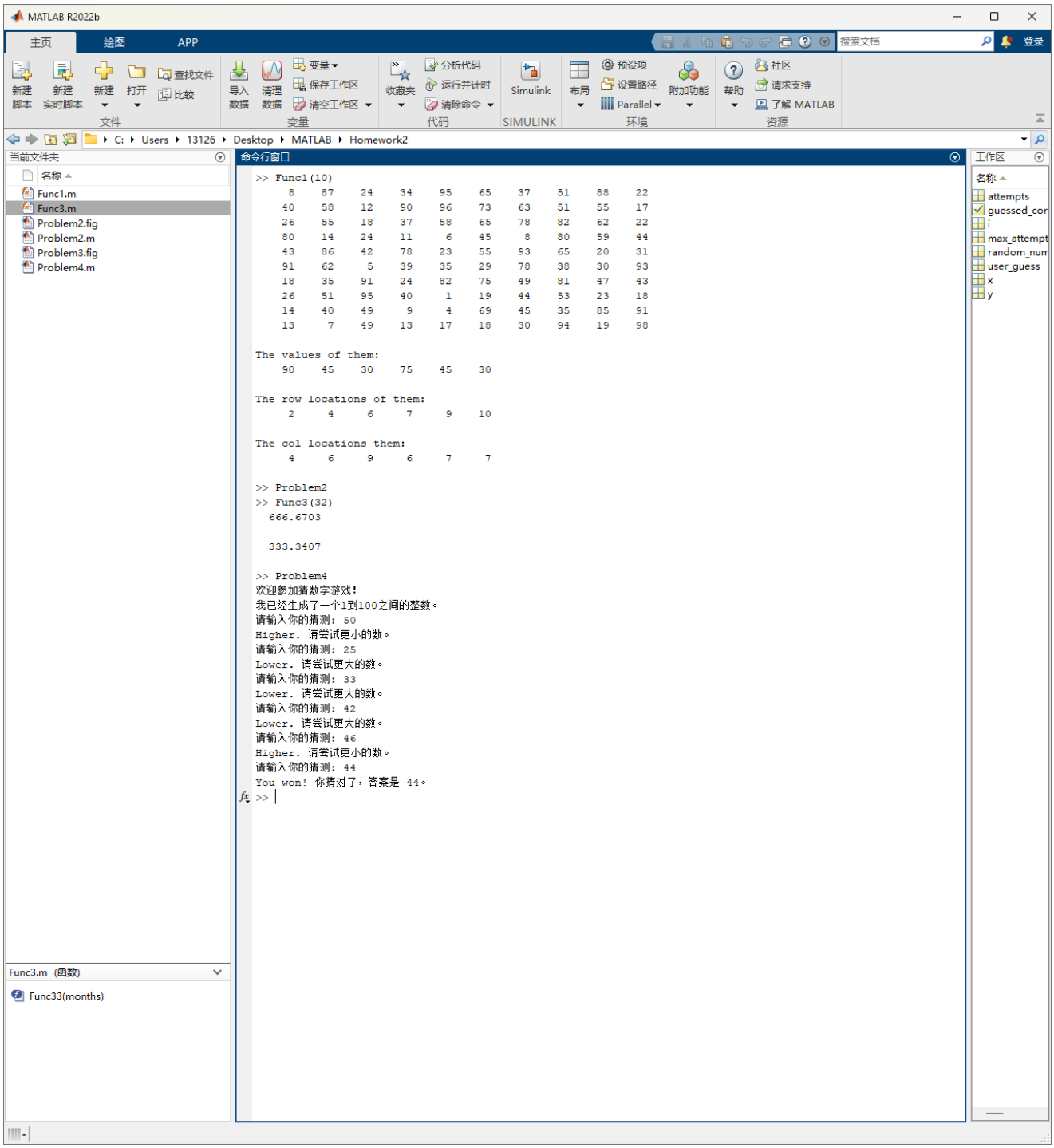
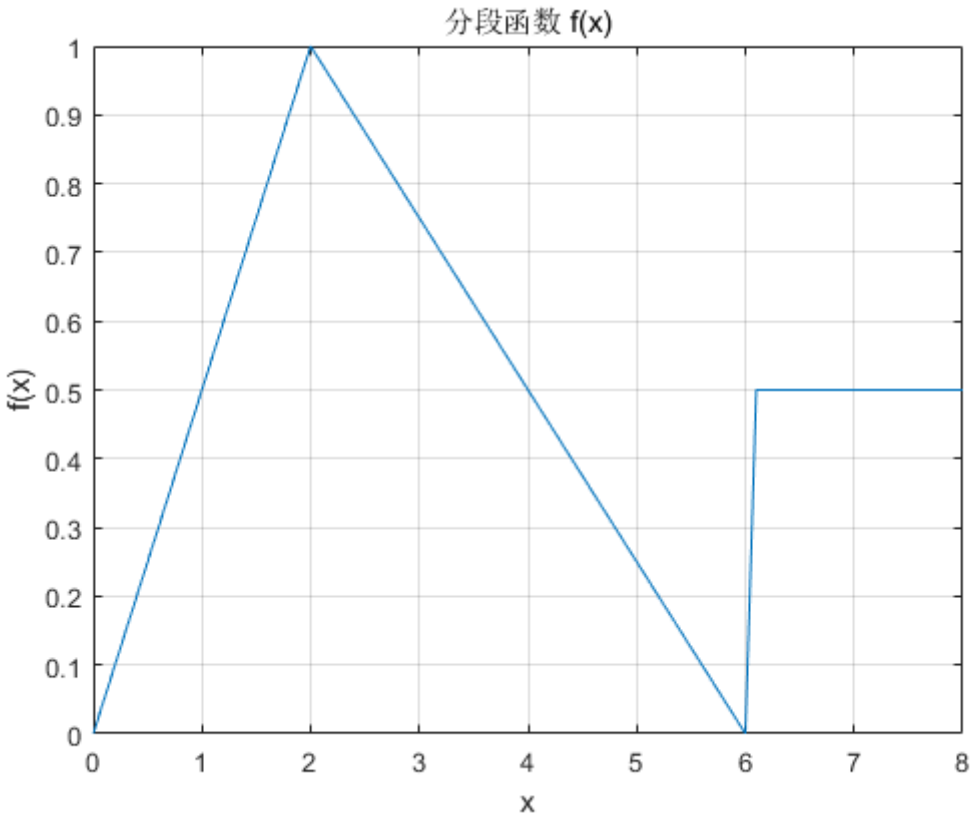
MATLAB 作业2

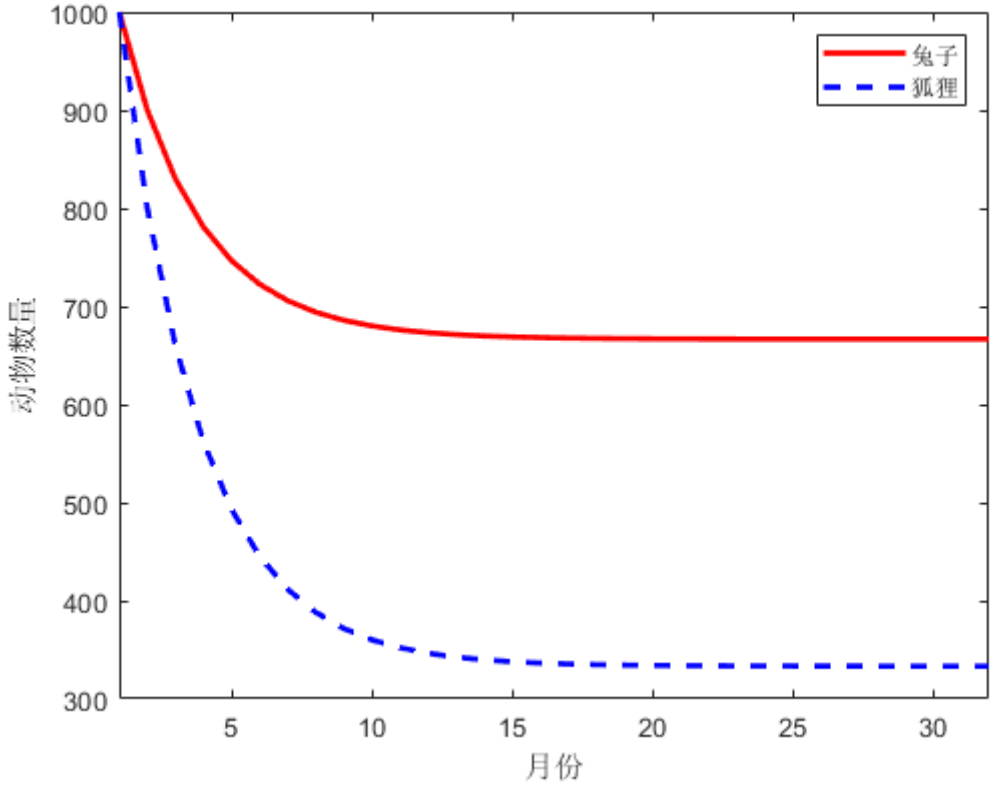
所有代码运行结果截图



Problem2 函数图像



Problem3 趋势图像



Problem 1

```
function Func1(matrix_order)
    % 生成随机矩阵
    matrix = randi([0, 100], matrix_order, matrix_order);

    % 初始化存储结果的数组
    values = [];
    row_indices = [];
    col_indices = [];

    % 遍历矩阵元素，查找15的倍数（除0以外）
    for i = 1:matrix_order
        for j = 1:matrix_order
            if mod(matrix(i, j), 15) == 0 && matrix(i, j) ~= 0
                values = [values, matrix(i, j)];
                row_indices = [row_indices, i];
                col_indices = [col_indices, j];
            end
        end
    end
    % 输出所有相关信息
    disp(matrix);
    disp('The values of them:');
    disp(values);
    disp('The row locations of them:');
    disp(row_indices);
    disp('The col locations them:');
    disp(col_indices);
end
```

Problem 2

```
x = 0:0.1:8;
y = zeros(size(x));

for i = 1:length(x)
    if x(i) <= 2
        y(i) = 0.5 * x(i);
    elseif x(i) > 2 && x(i) <= 6
        y(i) = 1.5 - 0.25 * x(i);
    else
        y(i) = 0.5;
    end
end

plot(x, y);
title('分段函数 f(x)');
xlabel('x');
ylabel('f(x)');
grid on;
```

Problem 3

```
function Func33(months)
    R = zeros(1, months+1);
    F = zeros(1, months+1);
    R(1) = 1000;
    F(1) = 1000;
    for i = 1:months
        R(i+1) = 1.1 * R(i) - 0.2 * F(i);
        F(i+1) = 0.2 * R(i) + 0.6 * F(i);
    end
    disp(R(months+1));
    disp(F(months+1));
    % 绘制两个图线，自变量使用默认值
    plot(R, 'r-', 'LineWidth', 2);
    hold on;
    plot(F, 'b--', 'LineWidth', 2);

    xlabel('月份');
    ylabel('动物数量');

    % 添加图例
    legend('兔子', '狐狸');

    % 设置x轴范围从1开始
    xlim([1, months]);

    % 停止保持图表
    hold off;
end
```

Problem 4

```
% 生成1到100之间的随机整数
random_number = randi([1, 100]);

% 初始化游戏参数
attempts = 0;
max_attempts = 7;
guessed_correctly = false;

fprintf('欢迎参加猜数字游戏! \n');
fprintf('我已生成一个1到100之间的整数。\n');

while attempts < max_attempts
    % 获取用户的猜测
    user_guess = input('请输入你的猜测: ');

    % 检查用户的猜测
    if user_guess == random_number
        fprintf('You won! 你猜对了，答案是 %d。\n', random_number);
        guessed_correctly = true;
        break;
```

```
    elseif user_guess < random_number
        fprintf('Lower. 请尝试更大的数。\n');
    else
        fprintf('Higher. 请尝试更小的数。\n');
    end

    attempts = attempts + 1;
end

if ~guessed_correctly
    fprintf('游戏结束。你没有猜中。答案是 %d。\n', random_number);
end
```