

概率论与数理统计第一次作业

16级计科7班 颜彬

用matlab编程语言实现求解下列问题，设随机变量 $X \sim N(2, 0.25)$

Ex1

求概率 $P\{0.5 < X < 2.5\}$

```
mu = 2
sigma = 0.25
P = normcdf(2.5, mu, sigma) - normcdf(0.5, mu, sigma)
```

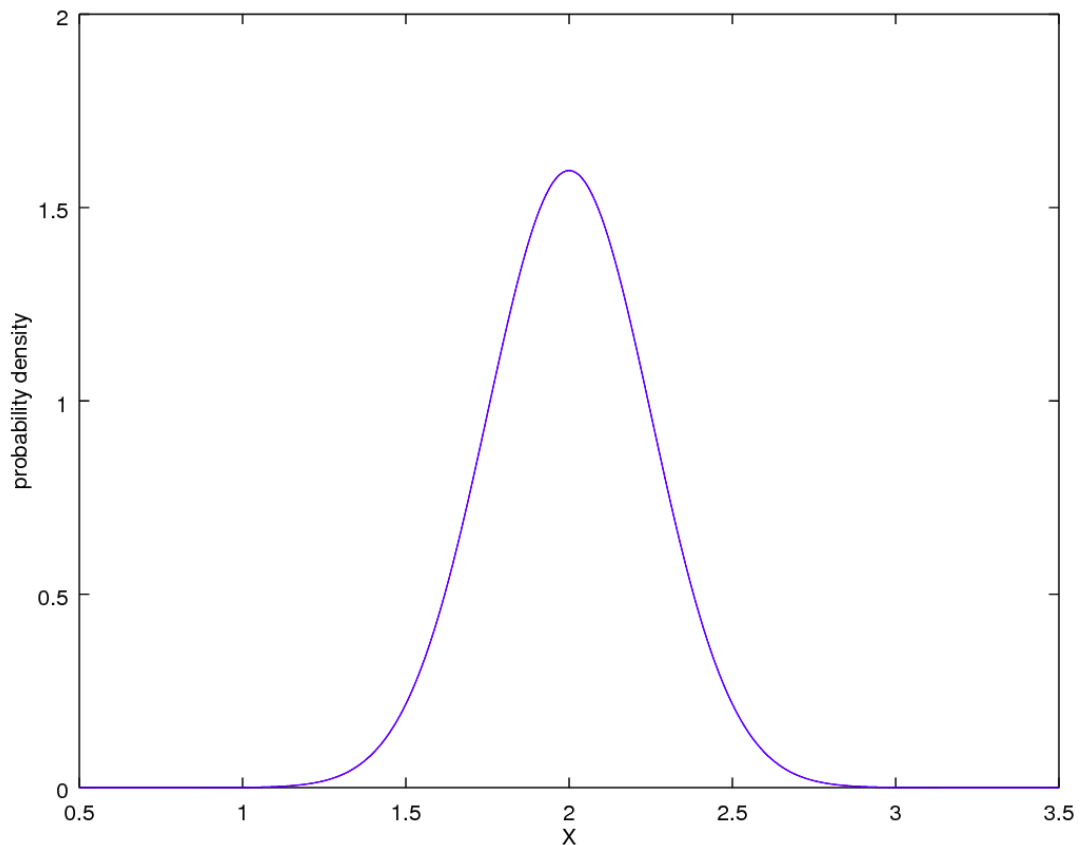
```
P = 0.97725
```

Ex2

绘制分布函数图和分布概率密度图;

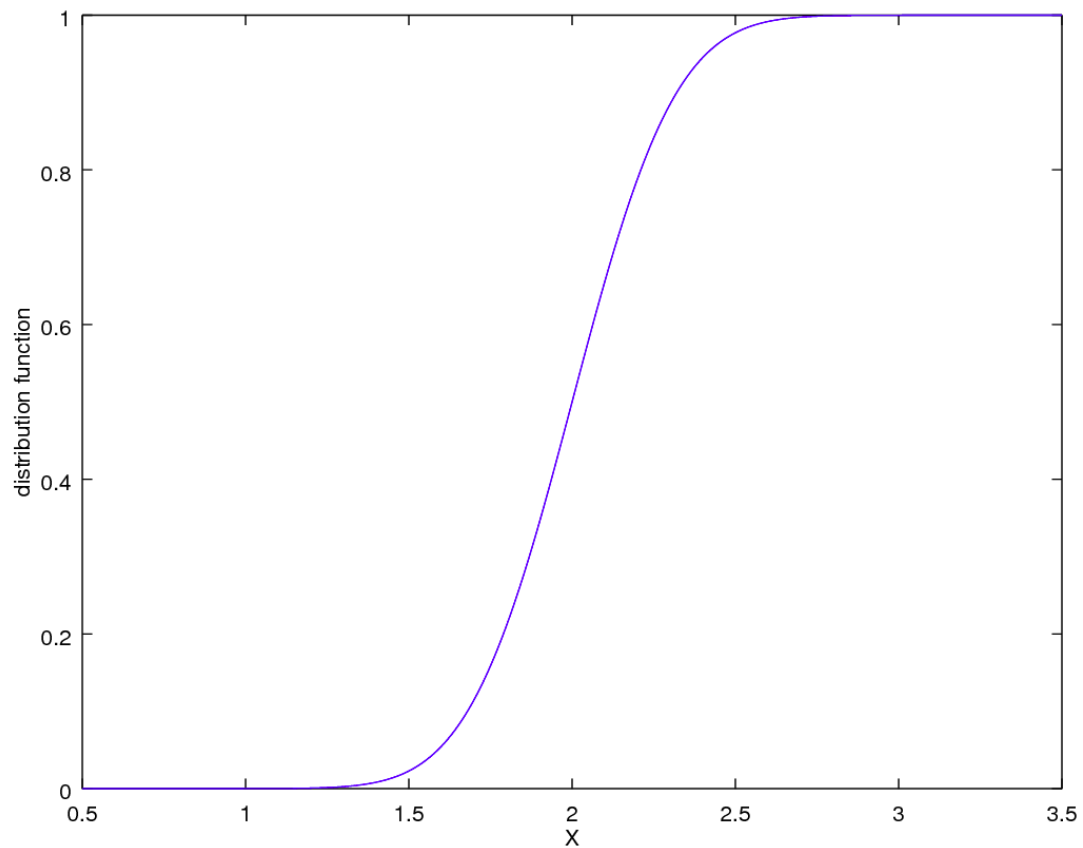
概率密度

```
x = [0.5 : 0.01 : 3.5]
y = normpdf(x, mu, sigma)
plot(x, y), xlabel('X'), ylabel('probability density')
```



分布函数图

```
x = [0.5 : 0.01 : 3.5]
y = normcdf(x, mu, sigma)
plot(x, y),
    xlabel('X'),
    ylabel('distribution function')
```



Ex3

画出区间 $[1.5, 1.9]$ 上的分布密度曲线下区域。

```
mu = 2;
sigma = 0.25;
x1 = [0.5 : 0.01 : 3.5];
x2 = [1.5 : 0.01 : 1.9]; % x of fill-in area
y1 = normpdf(x1, mu, sigma);
y2 = normpdf(x2, mu, sigma);
n = size(x2, 2) % n is x1/x2's num of columns
plot(x1, y1),
    hold,
    fill([x2, fliplr(x2)],
        [zeros(1, n), fliplr(y2)], 'b'),
    xlabel('X'),
    ylabel('probability density');
```

