```
1 from scipy.stats import norm, expon
  2 from scipy.integrate import quad
  3 import numpy as np
  4 import matplotlib.pyplot as plt
  1 \text{ mu} = 9
  2 \text{ sigma} = 0.05 * \text{mu}
  3 normdist = norm(mu, sigma)
  4
  5
  6 def Pff(t):
      return 1 - normdist.cdf(t)
   1 p8h = 1 - normdist.cdf(8)
   2 print('p8h: ' + str(p8h))
   4 p8h30m = 1 - normdist.cdf(8.5)
   5 print('p8h30m: ' + str(p8h30m))
   7 p8h 30m = p8h30m / p8h
   8 print('p8h 30m: ' + str(p8h 30m))
  10 \text{ Q8h}_30\text{m} = \text{p8h} - \text{p8h}30\text{m}
  11 print('Q8h_30m: ' + str(Q8h_30m))
  13 T1 = quad(Pff, 8.5, float("inf"))/Pff(8.5)
  14 T1 = [round(T1[0], 6), round(T1[1], 10)]
  15
  16 L8h30m = normdist.pdf(8.5) / (1 - normdist.cdf(8.5))
  18 Lambda = normdist.pdf(9) / (1 - normdist.cdf(9))
  19 print('T1: ' + str(T1))
  20 print('L8h30m: ' + str(L8h30m))
  21 print('Lambda: ' + str(Lambda))
  22
p8h: 0.9868658543089789
p8h30m: 0.8667397370974946
p8h 30m: 0.8782751306198564
Q8h 30m: 0.12012611721148425
T1: [np.float64(0.611725), np.float64(2.2e-09)]
L8h30m: 0.5517290236363467
Lambda: 1.7730768017841454
```

```
1 x = np.linspace(0.1, 10, 100)
2 v = normdist ndf(x)
https://colab.research.google.com/drive/1Zz05VToKazFuDL-FBwwm9v7QISwKECsU#scrollTo=CAt91vQWIr- &printMode=true
```

```
3 y1 = expon.pdf(x, scale=18)

4

5

6 plt.figure(figsize=(10, 6))

7 plt.plot(x, y, 'b-', linewidth=2)

8 plt.plot(x, y1, 'r-', linewidth=2)

9 plt.title('Нормальное распределение')

10 plt.xlabel('x')

11 plt.ylabel('PDF(x)')

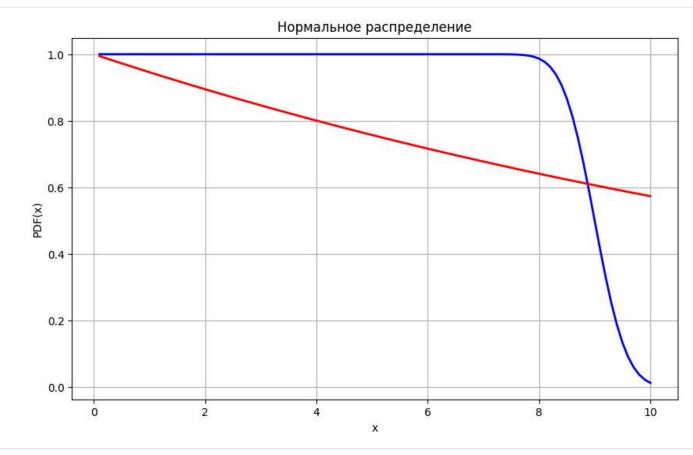
12 plt.grid(True)

13 plt.show()
```

## Нормальное распределение 0.8 0.6 PDF(x) 0.4 0.2 0.0 10 6 X

```
1 x = np.linspace(0.1, 10, 100)
2 y = 1. - normdist.cdf(x)
3 y1 = 1 - expon.cdf(x, scale=18)
4
5 plt.figure(figsize=(10, 6))
```

```
6 plt.plot(x, y, 'b-', linewidth=2)
7 plt.plot(x, y1, 'r-', linewidth=2)
8 plt.title('Нормальное распределение')
9 plt.xlabel('x')
10 plt.ylabel('PDF(x)')
11 plt.grid(True)
12 plt.show()
```



```
1 x = np.linspace(0.1, 10, 100)
2 y = normdist.pdf(x) / normdist.sf(x)
3 y1 = expon.pdf(x, scale=18) / expon.sf(x, scale=18)
4
5 plt.figure(figsize=(10, 6))
6 plt.plot(x, y, 'b-', linewidth=2)
7 plt.plot(x, y1, 'r-', linewidth=2)
8 plt.title('Нормальное распределение')
9 plt.xlabel('x')
10 plt.ylabel('PDF(x)')
```

11 plt.grid(True)
12 plt.show()

