习题

1.(1)$\int_0^1 \frac{1}{1+x^2}dx$

(2)$\int_0^1 \sin \pi x dx$

2.22m

5.(2)令$f(x)=2^{-\sin x}$

$\because x \in [0,\pi]$

$\therefore \sin x \in [0,1]$

6.$\int_n^{n+1} e^{-x^2}dx = e^{-\xi^2} \cdot 1 \to 0(\xi > n)$

7.3 $\int_1^{\frac{2}{3}} f(x)dx = f(\xi) = (0)$

由罗尔定理可得

8.(1)假设$\exists x_0 \in [a,b]$使得$f(x_0)>0$

又$\because f(x)$连续，

$\therefore \exists \varepsilon > 0$使得$f(x)$在$(x_0-\varepsilon, x_0+\varepsilon)$

上有$f(x)>0$，

$\int_a^b f(x)dx = \int_a^{x_0-\varepsilon} f(x)dx + \int_{x_0-\varepsilon}^{x_0+\varepsilon} f(x)dx + \int_{x_0+\varepsilon}^{b} f(x)dx > 0$

与假设不符

(2)令$F(x)=f(x)-g(x)$由(1)的结论可证