**Q1**

Mean value = 7

|  |
| --- |
| X = 0:14  P = factorial(14)./(factorial(14-X).\*factorial(X))\*0.5^14    N = X.\*P  sum(N)  ans = 7 |

Standard Deviation = =1.8708

|  |
| --- |
| VAR = P.\*(X-mean).^2  sqrt(sum(VAR))  ans =1.8708 |

**Q2**

|  |
| --- |
| x = 0:7  y = (exp(-2.4)\*2.4.^x)./factorial(x)  sum(y)  ans =0.9967    x = [0:1:20]  y=(exp(-10)\*10.^x)./factorial(x)  sum(y)  ans = 0.9984 |

The peak value appears at 10 and shifts to the right. Will it be further to the right to become skew-to-the-left?

不會，當p=1時會呈現鐘形分佈。

|  |
| --- |
| X = 0:7  Y = poisspdf(X,2.4)  bar(X,Y)    Y = poisscdf(0,2.4)  Y =0.0907  Y = poisscdf(1,2.4)  Y =0.3084  Y = poisscdf(2,2.4)  Y =0.5697  Y = poisscdf(3,2.4)  Y =0.7787  >> poissinv(0.5,2.4)  ans =2  >> poissinv(0.75,2.4)  ans =3  >> poissinv(0.9,2.4)  ans =4 |

**Q3**

|  |
| --- |
| >> lambda=6\*(90/60)  lambda =9  >> poisspdf(7, lambda)  ans =  0.1171  >> 1-poisscdf(9, lambda)  ans =0.4126 |

What are MATLAB commands to produce this graph?

|  |
| --- |
| lambda = 6\*(90/60)  x = [0:30]  P = poisspdf(x,lambda)  bar(x,P) |

**Q4**

|  |
| --- |
| >> lambda=6\*(15/60)  lambda =1.5000  >> 1-poisscdf(0, lambda)  ans = 0.7769 |

What are MATLAB commands to produce this graph?

|  |
| --- |
| lambda = 6\*(15/60)  x = [0:30]  P = poisspdf(x,lambda)  bar(x,P) |

**Q5**

|  |
| --- |
| >> x = [-4:0.1:4]  >> y = 1/(sqrt(2\*pi))\*exp(-0.5.\*x.\*x) |

Given a standard normal distribution.

• What is the probability between x=0 to 2?

|  |
| --- |
| syms f  syms x  f=1/(sqrt(2\*pi))\*exp(-0.5\*x\*x)  int(f,0,2)  double(ans)  ans =0.4772 |

• What is the accumulated probability from –∞ to 1?

|  |
| --- |
| **方法一**  int(f,-Inf,1)  double(ans)  ans =0.8413  **方法二**  >> normcdf(1)  ans =0.8413 |

• What is the value of x to given a probability of 0.95 from x = –∞?

|  |
| --- |
| >> norminv(0.95)  ans =0.6449 |