Practical 9

Binomial and Normal Distribution

Ex. 1 *X is normally distributed and the mean of X is 12 and the SD is 4. Find out the probability of the following:*
(i) $X \geq 20$ *(ii)* $X \leq 20$ *(iii)* $0 \leq X \leq 12$.

CODE:

(a) pnorm(20,mean=12,sd=4,lower.tail=FALSE)

(b) pnorm(20,mean=12,sd=4,lower.tail=TRUE)

(c) pnorm(0, mean=12,sd=4, lower.tail=FALSE) -

pnorm(12,mean=12,sd=4, lower.tail=TRUE)

Ex.2. Suppose the number of games in which major league baseball players play during their careers is normally distributed with mean equal to 1500 games and standard deviation equal to 350 games. Use R to solve the following problems.

(a) What percentage play in fewer than 750 games?

(b) What percentage play in more than 2000 games?

(c) What percentage play between 750 and 2000 games?

(d) Find the 90th percentile for the number of games played during a career.

CODE:

```
(a) pnorm(750, mean=1500, sd=350, lower.tail=TRUE)
(b) pnorm(2000, mean=1500, sd=350, lower.tail=FALSE)
(c) pnorm(750, mean=1500, sd=350, lower.tail=FALSE)-pnorm(2000,
    mean=1500, sd=350, lower.tail=TRUE)
(d) qnorm(0.9, mean=1500, sd=350)
(e) rnorm(750, mean=1500, sd=350)
```