

확률과 통계 6주차 과제 답안

1. R을 사용하여 다음의 확률을 구하라. (각 2.5점)

$$X \sim N(10, 4), Y \sim t(15), V \sim \chi^2(20), W \sim F(5,15)$$

각 분포에 맞는 R 함수를 사용해서 확률값을 구하면,

(1) $P(13 < X < 15)$

$$\text{pnorm}(2.5) - \text{pnorm}(1.5) = 0.06059754$$

(2) $P(7 < X < 11)$

$$\text{pnorm}(0.5) - \text{pnorm}(-1.5) = 0.6246553$$

(3) $P(0.7 < Y < 1.4)$

$$\text{pt}(1.4, 15) - \text{pt}(0.7, 15) = 0.1563928$$

(4) $P(-1.2 < Y < 0.8)$

$$\text{pt}(0.8, 15) - \text{pt}(-1.2, 15) = 0.6575261$$

(5) $P(V > 5.3)$

$$1 - \text{pchisq}(5.3, 20) = 0.9995653$$

(6) $P(1.2 < V < 10.3)$

$$\text{pchisq}(10.3, 20) - \text{pchisq}(1.2, 20) = 0.03759983$$

(7) $P(2.1 < W < 4.1)$

$$\text{pf}(4.1, 5, 15) - \text{pf}(2.1, 5, 15) = 0.1068631$$

(8) $P(W > 12.3)$

$$1 - \text{pf}(12.3, 5, 15) = 7.219481\text{e-}05$$