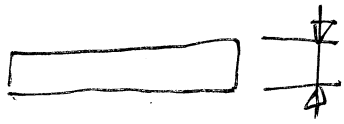
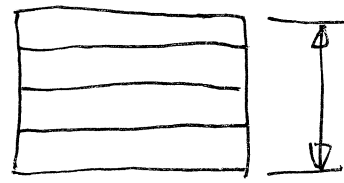
[問3] 第40回 2級



$t \sim N(\mu_t, \sigma_t^2)$



$T \sim N(4\mu_t, 16\sigma_t^2)$ ① ④ ② 16

[1]

① $E(X_1+X_2+X_3+X_4) = E(X_1)+E(X_2)+E(X_3)+E(X_4)$

$= 4E(X) = 4\mu_t$ ㋐ (13) ㋐

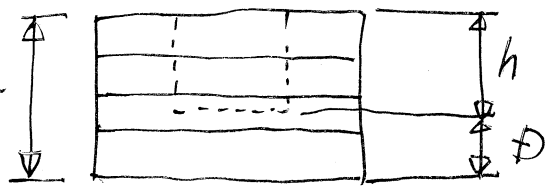
$V(X_1+X_2+X_3+X_4) = V(X_1)+V(X_2)+\cdots$

$= 4V(X) = 4\sigma_t^2$ ㋐ (14) ㋐

② $V(X_1+X_1+X_1+X_1)$

$= V(4X_1) = 4^2(X) = 16\sigma_t^2$ ㋓ (15) ㋓

[2]



$T \sim N(4\mu_t, 4\sigma_t^2)$

$h \sim N(2.5\mu_t, \sigma_h^2)$

$\Phi = T - h$

$E(\Phi) = E(T-h) = E(T) - E(h)$

$= 4\mu_t - 2.5\mu_t = 1.5\mu_t$

$= 1.5 \times 2 = 3$ ㋒ (16) ㋒

$V(\Phi) = V(T-h) = V(T) + V(h)$

$= 4\sigma_t^2 + \sigma_h^2$

$= 4 \times 0.4^2 + 0.6^2$

$= 1$ ㋑ (17) ㋑