

Problem 101

$$Z = 3 \cdot X - Y - 5$$

$$V(X) = 1 ; V(Y) = 2$$

X and Y independent $\Rightarrow \text{cov}(X, Y) = 0$

$$V(Z) = V(3 \cdot X - Y - 5)$$

$$= 3^2 \cdot (1) + (-1)^2 \cdot 2 + 2(3)(-1)(0)$$

$$V(a \cdot X + b \cdot Y + c) = a^2 \cdot V(X) + b^2 \cdot V(Y) + 2 \cdot a \cdot b \cdot \text{cov}(X, Y)$$

$$= 11$$

$$= \boxed{11}$$