Jahnavi Bonagiri 367 HW 4

(1) i) $E(X) = (0)(.54) + (1)(.16) + 2(.06) + 3(.04) + 4(.20) = \boxed{1.2}$

ii) $V(X) = (0)^2(.54) + (1)^2(.16) + 2^2(.06) + (3^2)(.04) + 4^2(.20)$
$= 3.96$
$V(X) = 3.96 - [E(X)]^2 = 3.96 - (1.2)^2$
$= \boxed{2.52}$

(2) i) $E(X) = (1)(.05) + 2(.10) + (3)(.12) + (4)(.30) +$
$5(.30) + 6(.11) + 7(.01) + 8(.01)$
$= \boxed{4.12}$

ii) $V(X) = (1)^2(.05) + (2)^2(.10) + (3)^2(.12) + (4)^2(.30) +$
$5^2(.30) + (6)^2(.11) + (7)^2(.01) + (8)^2(.01)$
$= 18.92$
$V(X) = 18.92 - [E(X)]^2 = 18.92 - (4.12)^2$
$= \boxed{1.94}$

iii) $P(X \leq 5) = P(1) + P(2) + P(3) + P(4) + P(5)$
$.05 + .10 + .12 + .30 + .30$
$= \boxed{.87}$

iv) $P(X > 3) = P(4) + P(5) + P(6) + P(7) + P(8)$
$.30 + .30 + .11 + .01 + .01 = \boxed{.73}$

(3) i) $E(X) = (0)(.073) + (1)(.117) + (2)(.258) + (3)(.322) + (4)(.230)$

$= \boxed{2.519}$

ii) $V(X) = (0)^2(.073) + (1)^2(.117) + (2)^2(.258) + (3)^2(.322) + (4)^2(.230)$

$V(X) = 7.727 - [E(X)]^2 = 7.27 - (2.519)^2$

$= \boxed{1.38}$

(4) i) $E(4X_1 + \pi X_2 + eX_3 + 13)$

$= 4(4) + 5(\pi) + 7(e) + 13 = \boxed{63.74}$

ii) $E(X_1X_3 + X_2) = (4)(7) + 5 = \boxed{33}$

iii) $V(\sqrt{2}X_2 + 3\sqrt{X}_3 + 17)$

$= (\sqrt{2})^2(\frac{1}{2}) + (\sqrt{3})^2(\sqrt{2}) + (0)^{\blacksquare} = \boxed{5.24}$

becomes 0 constant