Q4/ $f(x) = \frac{4}{\pi(1+x^2)}$

$$= \int_0^1 \frac{4}{\pi(1+x^2)}$$

$$\frac{2}{\pi} \int_0^1 \frac{2}{1+x^2}$$

$$\frac{2}{\pi} \int_0^1 \ln(1+x^2)$$

$$= \frac{2}{\pi} \ln 2$$

2/ $u = E(X) = \int x f(x)$

$$= \int_0^1 x\,(2(1-x))$$

$$= 2\int_0^1 x - x^2$$

$$= 2\int_0^1 \frac{x^2}{2} - \frac{x^3}{3})$$

$$= 2\left|\frac{1}{2} - \frac{1}{3}\right|_0^1$$

$$= 2\left(\frac{3-2}{6}\right) = \frac{1}{3}$$ (500

Date:

$= \$ 1,6667$

Q.13/ $\int_0^1 x f(x)_1 + \int_1^2 x f(x)_2$

$= \int_0^1 x x^2 + \int_1^2 2x - x^2$

$= \left| \frac{x^3}{3} \right|_0^1 + \frac{\cancel{2}x^2}{\cancel{2}} - \frac{x^3}{3} \Big|_1^2$

$= \frac{1}{3} + \frac{2}{3} = 1$

$E(x) = 100 = 100$ hours

Q.44/ $f(x) = \frac{2(x+2)}{5}$

$E(X) = \int x f x$

$= \frac{2}{5} \int x^2 + 2x)$

$= \frac{2}{5} \int_0^1 \frac{x^3}{3} + \frac{\cancel{2}x^3}{\cancel{2}}$

$\frac{2}{3}\left[\frac{x^3}{3} + x^2\right]_0^1 \Rightarrow \frac{8}{15}$

Q16)

$P(X_1 = 0 \mid P X_2 = 1) + P(X_1 = 1 \mid P(X$

$+ P(X_1 = 1), \} P(X_2 = 0) \}$.

$\left(\frac{20}{1000} \times \frac{980}{999}\right) + \left(\frac{980}{1000} \times \frac{20}{999}\right) +$

$\frac{980}{1000}\left(\frac{20}{1000} \times \frac{19}{1000}\right)$

$= 0.0396$

17/ $g(-3) = 25$
$g(6) = 169$.
$g(9) = 361$.

$\mu g_x = [25 \times 1/6 + 169 \times 1/2 + 36$

$\mu g_x = 207$.

4.30 $\frac{1}{4} e^{-y/4} \quad y > 0$

$$\int \frac{1}{4} e^{-y/4}$$

$$= \frac{1}{4} \left| -e^{-y/4} \right|_0^{\infty}$$

$$= \frac{1}{4} \left| -e^{-\infty/4} - [-e^{0}] \right.$$

$$\int y \cdot \frac{1}{4} e^{-y/4} \, dy.$$

$$y \cdot -e^{-y/4} - \int_0^t -e^{-y/4}$$

$$-y e^{-y/4} \mp 4 \left| -e^{-y/4} \right|_0^{t}$$

$$-t e^{-t/4} - 4 e^{-t/4} + 4.$$

$$-e^{-t/4} (t + 4) + 4.$$

$\lim t - \infty$

$= 4.$

Date:..........................

4.32/ $x f(x)$

b) $E(X) = 0(0.41) + 1(0.37) + 2(0.16) + 3(0.05) + 4(0.01)$

$= 0.88$

4.29/ $x \int_{1}^{\infty} 3x^{-4}$

$= 3\int_{1}^{\infty} x^{-3}$

$= 3 \int \frac{x^{-3+1}}{-3+1} = \frac{-3}{2} \left| x^{-2} \right|_{1}^{\infty}$

$= \cancel{\frac{3}{2} \left[x^{-x} - x \right.}$

$= \frac{-3}{2} \left[t^{-2} + \frac{3}{2} (1)^{-2} \right.$

where $\lim_{t \to \infty} \frac{-3}{2} t^{-2} = 0$

$= \frac{3}{2}$

Scanned by TapScanner

4.28) $f(x) = \frac{2}{5}$

$$\mu = \int x f x$$

$$= \int_{23.75}^{26.25} \frac{2}{5} x = \frac{2}{5\cancel{10}} \int_{23.75}^{26.25} x^2$$

$$= \frac{1}{5} \left| (26.25)^2 - (23.75)^2 \right|$$

$$= 25$$

4.34)

-2	3	5
0.3	0.2	0.5

$$\mu = -2(0.3) + 3(0.2) + 5(0.5)$$
$$= 2.5.$$

$$E(x^{n2}) = 4(0.3) + 9(0.2) + 25(0.5$$
$$= 16.5.$$

$$\sigma^2 = E(x^{n2}) - \mu^2$$
$$= 16.5 - 6.25$$
$$= 9.25$$

$$\sigma = \sqrt{9.25} = 3.041$$