# Department of Mathematics
## MTL 106 (Introduction to Probability Theory and Stochastic Processes)
## Tutorial Sheet No. 5
### Answer for selected Problems

1.

a) $\frac{13}{18}, 0, \frac{1}{6}$

b) $E[Y/X] = \frac{X+1}{2} \quad E[X/Y] = \frac{Y}{2}$

c) MGF$= E[e^{t_1 X + t_2 Y}] = 4[\frac{e^{t_1}-t_1-1}{t_1}][\frac{t_2 e^{t_2}-e^{t_2}-1}{t_2^2}]$ correlation coefficient$= 0.5$

2. 0.

5. (b) $E\left[\left(E\left[e^{tX_1}\right]\right)^N\right]$.

6. $E[Y/X = x] = 7x$

31. (a) $\frac{X^3}{3} - \frac{X}{5}, \frac{X^3}{3} + \frac{2}{15}X$