

$X$  is a discrete random variable which takes the values  $0, 2, 4, \dots$ . The probability generating function of  $X$  is given by

$$G_X(t) = \frac{1}{3-2t^2}.$$

**(a)** Find  $E(X)$  and  $\text{Var}(X)$ . [5]

**(b)** Find  $P(X = 4)$ . [3]