

5(a)	$k \int_0^2 (2x^2 - x^3) \, dx = 1$
	$k \left[\frac{2x^3}{3} - \frac{x^4}{4} \right]_0^2 = 1$
	$k \times \frac{4}{3} = 1 \quad k = \frac{3}{4}$
5(b)(i)	0.5
5(b)(ii)	$E(X) = \frac{3}{4} \int_0^2 (2x^3 - x^4) \, dx$
	$= \frac{3}{4} \left[\frac{2x^4}{4} - \frac{x^5}{5} \right]_0^2 = \frac{6}{5}$
	$P(X < E(X)) = \frac{3}{4} \int_0^{1.2} (2x^2 - x^3) \, dx$
	$= \frac{3}{4} \left[\frac{2x^3}{3} - \frac{x^4}{4} \right]_0^{1.2} = \frac{594}{1250} \text{ or } 297/625 \text{ or } 0.4752$
	$P(E(X) \leq X \leq m) = 0.5 - '0.4752'$
	$= 0.0248 \text{ or } 31/1250$