Question Number	Scheme	Marks
1(a)	[F(1) = 1 so] $k(6\times1^2-1^4)=1$ leading to $k=\frac{1}{5}$*	B1*
		(1)
(b)	[1 – F(0.6) =] $1-\frac{1}{5}\left(6\times0.6^2-0.6^4\right)$	M1
	= 0.59392 awrt 0.594	A1
		(2)
(c)(i)	$\frac{1}{5}\left(6m^2-m^4\right)=\frac{1}{2}$	M1
	$2m^4-12m^2+5=0$ oe	A1
(ii)	m = 0.6711… awrt 0.671	A1
		(3)
(d)	$\left[\frac{\mathrm{d}}{\mathrm{d}x}\left(\frac{6}{5}x^2-\frac{1}{5}x^4\right)=\right]\frac{12}{5}x-\frac{4}{5}x^3$	M1
	$\left[\frac{\mathrm{d}}{\mathrm{d}x}\left(\frac{12}{5}x-\frac{4}{5}x^3\right)=\right]\frac{12}{5}-\frac{12}{5}x^2=0$	M1
	$x=1$	A1
		(3)
(e)	Mean < "Median" < "Mode"	M1
	So negative [skew]	A1ft
		(2)

	Notes	**Total 11**
(a)	**B1***	for use of F(1) = 1 leading to the given answer (minimum required is $k(6 – 1) = 1$) Allow use of F(1) – F(0) = 1 e.g. k(6 – 1) – k(0 – 0) = 1 The answer is given so no incorrect working can be seen
(b)	**M1**	for using 1 – F(0.6) May be implied by $1-\frac{1269}{3125}$ or $\frac{1856}{3125}$
	A1	awrt 0.594 Allow $\frac{1856}{3125}$
(c)(i)	**M1**	for setting F(m) = 0.5 Allow any letter (including x)
	A1	for a correct 3TQ oe **NB** the values of a, b and c must be integers
(ii)	**A1**	awrt 0.671 Allow $\sqrt{\frac{6-\sqrt{26}}{2}}$ (must reject other roots if seen) **NB** It is possible to score M1A0A1
(d)	**M1**	for differentiating F(x) with at least one $x^n \to x^{n-1}$ May be left in terms of k eg. $k(12x – 4x^3)$ Condone missing k
	M1	for differentiating twice with at least one $x^n \to x^{n-1}$ and setting = 0 oe May be left in terms of k eg. $k(12 – 12x^2)=0$ Condone missing k
	A1	Cao (Must reject x = –1 if seen)
(e)	**M1**	a correct justification using the Mean and their Median and/or their Mode. This must be correct for their values Allow use of figures e.g. 0.64 < "0.671" < "1" Allow comparisons of "median" and "mode" on its own. Comparison with 0.5 is M0 unless 0.5 is their median or mode
	A1ft	a correct conclusion based on their comparison (Do not allow a conclusion that is not fully supported by their comparison)