Log-concavity of Some Common Distributions

Distribution	Density	c.d.f.	Int of c.d.f	Reliability	Int of Reliability
Uniform	log-concave	log-concave	log-concave	log-concave	log-concave
Normal	log-concave	log-concave	log-concave	log-concave	log-concave
Logistic	log-concave	log-concave	log-concave	log-concave	log-concave
Extreme Value	log-concave	log-concave	log-concave	log-concave	log-concave
Chi-Squared	log-concave	log-concave	log-concave	log-concave	log-concave
Chi	log-concave	log-concave	log-concave	log-concave	log-concave
Exponential	log-concave	log-concave	log-concave	log-concave	log-concave
Laplace	log-concave	log-concave	log-concave	log-concave	log-concave
Weibull ($c \geq 1$)	log-concave	log-concave	log-concave	log-concave	log-concave
Power Function ($\beta \geq 1$)	log-concave	log-concave	log-concave	log-concave	log-concave
Gamma ($m \geq 1$)	log-concave	log- concave	log-concave	log-concave	log-concave
Beta ($a \geq 1$,$b \geq 1$)	log-concave	log-concave	log-concave	log-concave	log-concave
Log Normal	mixed	log-concave	log-concave	*mixed	*mixed
Pareto	log-convex	log-concave	log-concave	log-convex	log-convex
Power Function ($\beta < 1$)	log-convex	log-concave	log-concave	mixed	mixed
Weibull ($c < 1$)	log-convex	log-concave	log-concave	log-convex	?
Gamma ($m < 1$)	log-convex	log-concave	log-concave	log-convex	?
Beta ($a = .5$,$b = .5$)	log-convex	mixed*	?	mixed*	?
Beta ($a = 2$, $b = .5$)	mixed	mixed	mixed	log-convex	log-convex
Student's t	mixed	mixed*	?	mixed*	?
Cauchy	mixed	mixed*	undefined	mixed*	undefined
F distribution	mixed	?	?	?	?
Mirror-Image Pareto	log-convex	log-convex	log-convex	log-concave	log-concave
Mirror-Image Log Normal	mixed	mixed	mixed	log-concave	logconcave

* denotes answers found, not by analytic means, but by numerical simulation for particular parameter values. See detailed comments on the particular distribution.