(Note: The same setup is used for all three problems.)
If X and Y are independent random variables, with X uniform on $[-1, 2]$ and Y uniform on $[-1, 1]$, then what is the probability that Y is less than the absolute value of X ?

(a) $5/6$

(b) $1/6$

(c) $1/4$

(d) $1/3$

(e) $1/2$

(f) $2/3$

(g) $5/12$

(h) $1/12$

(i) $7/12$

(j) $1/\sqrt{2}$

(k) $1/(2\sqrt{2})$

(l) None of these