

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  $Y + 1$  is less than  $X^2$ ?

- (a)  $\frac{13-4\sqrt{2}}{18}$
- (b)  $1 - \frac{4\sqrt{2}}{18}$
- (c)  $\frac{4\sqrt{2}}{18}$
- (d)  $1 - \frac{2\sqrt{2}}{18}$
- (e)  $\frac{2\sqrt{2}}{18}$
- (f)  $\frac{13}{18}$
- (g)  $\frac{2}{9}$
- (h)  $1 - \frac{4\sqrt{2}}{9}$
- (i)  $\frac{4\sqrt{2}}{9}$
- (j)  $\frac{4}{9}$
- (k)  $1 - \frac{\sqrt{2}}{9}$
- (l) None of these