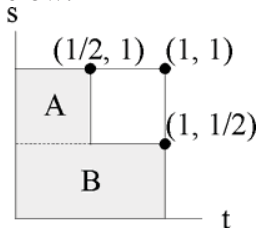


79. Solution: E

The domain of s and t is pictured below.



Note that the shaded region is the portion of the domain of s and t over which the device fails sometime during the first half hour. Therefore,

$$\Pr\left[\left(S \leq \frac{1}{2}\right) \cup \left(T \leq \frac{1}{2}\right)\right] = \int_0^{1/2} \int_{1/2}^1 f(s, t) ds dt + \int_0^1 \int_0^{1/2} f(s, t) ds dt$$

(where the first integral covers A and the second integral covers B).