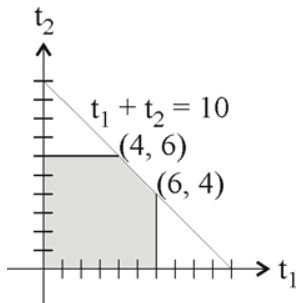


94. Solution: C

Let $f(t_1, t_2)$ denote the joint density function of T_1 and T_2 . The domain of f is pictured below:



Now the area of this domain is given by

$$A = 6^2 - \frac{1}{2}(6-4)^2 = 36 - 2 = 34$$

$$\text{Consequently, } f(t_1, t_2) = \begin{cases} \frac{1}{34} & , 0 < t_1 < 6, 0 < t_2 < 6, t_1 + t_2 < 10 \\ 0 & \text{elsewhere} \end{cases}$$

and

$$E[T_1 + T_2] = E[T_1] + E[T_2] = 2E[T_1] \quad (\text{due to symmetry})$$

$$= 2 \left\{ \int_0^4 t_1 \int_0^6 \frac{1}{34} dt_2 dt_1 + \int_4^6 t_1 \int_0^{10-t_1} \frac{1}{34} dt_2 dt_1 \right\} = 2 \left\{ \int_0^4 t_1 \left[\frac{t_2}{34} \Big|_0^6 \right] dt_1 + \int_4^6 t_1 \left[\frac{t_2}{34} \Big|_0^{10-t_1} \right] dt_1 \right\}$$

$$= 2 \left\{ \int_0^4 \frac{3t_1}{17} dt_1 + \int_4^6 \frac{1}{34} (10t_1 - t_1^2) dt_1 \right\} = 2 \left\{ \frac{3t_1^2}{34} \Big|_0^4 + \frac{1}{34} \left(5t_1^2 - \frac{1}{3}t_1^3 \right) \Big|_4^6 \right\}$$

$$= 2 \left\{ \frac{24}{17} + \frac{1}{34} \left[180 - 72 - 80 + \frac{64}{3} \right] \right\} = 5.7$$