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

and

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

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

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

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

95. Solution: E

\[
M(t_1, t_2) = E[e^{t_1X + t_2Z}] = E[e^{t_1(X+Y) + t_2(Y-X)}] = E[e^{(t_1-t_2)X + (t_1+t_2)Y}]
\]

\[
= E[e^{(t_1-t_2)X}] E[e^{(t_1+t_2)Y}] = \frac{1}{e^{2(t_1-t_2)^2}} \frac{1}{e^{2(t_1+t_2)^2}} = \frac{1}{e^{2(t_1^2-2t_1t_2+t_2^2)}} \frac{1}{e^{2(t_1^2+2t_1t_2+t_2^2)}} = e^{t_1^2+t_2^2}
\]

96. Solution: E

Observe that the bus driver collect 21 \times 50 = 1050 for the 21 tickets he sells. However, he may be required to refund 100 to one passenger if all 21 ticket holders show up. Since passengers show up or do not show up independently of one another, the probability that all 21 passengers will show up is \((1 - 0.02)^{21} = (0.98)^{21} = 0.65\). Therefore, the tour operator’s expected revenue is \(1050 - (100)(0.65) = 985\).