Matrix of T Corresponding to B is

$$[T:B] = [T]_B = \begin{bmatrix} 0 & 2 & 1 \\ 1 & -4 & 0 \\ 3 & 0 & 0 \end{bmatrix}$$

Ans

Solution

$$T(a, b, c) = (2b+c, a-4b, 3a)$$

$$T(1,1,1) = (3, -3, 3)$$
$$T(1,1,0) = (2, -3, 3)$$
$$T(1,0,0) = (0, 1, 3)$$

Let,

$$(a, b, c) = x(1,1,1) + y(1,1,0) + z(1,0,0)$$
$$(a, b, c) = (x+y+z,\ x+y,\ x)$$

$$a = x + y + z$$
$$b = x + y$$
$$c = x$$

$\boxed{x = c}$