System of 3 Equations-Matrix

TICKET SALES For the opening day of a carnival, 800 admission tickets were sold. The receipts totaled $3775. Tickets for children cost $3 each, tickets for adults cost $8 each, and tickets for senior citizens cost $5 each. There were twice as many children's tickets sold as adult tickets. How many of each type of ticket were sold?

Example: 10 child x 5 adult y

x = # child tickets

y = # adult tickets

z = # Senior citizen tickets

$$x + y + z = 800$$
$$3x + 8y + 5z = 3775$$
$$-x + 2y + 0z = 0$$

$$\begin{bmatrix} 1 & 1 & 1 \\ 3 & 8 & 5 \\ -1 & 2 & 0 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 800 \\ 3775 \\ 0 \end{bmatrix}$$

A B

$2x = y$

$2(10) = 5$? No

$2y = x$

$2(5) = 10$? Yes

$2y = x$

$-x \quad -x$

$-x + 2y = 0$

In Home Screen: $A^{-1} * B$

$$\begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 450 \\ 225 \\ 125 \end{bmatrix}$$

450 child tix
225 adult tix
125 senior tix