

State whether the product is defined. If so, give the dimensions of AB.

1. A: 3×3 , B: 3×1 3×1
2. A: 2×3 , B: 2×3 no
3. A: 3×1 , B: 1×3 3×3
4. A: 3×3 , B: 1×3 no
5. A: 2×2 , B: 2×2 2×2

Find the product. If not defined, state the reason.

~~2×2~~ ~~3×3~~ (2×3)

6. $\begin{bmatrix} 1 & 4 \\ -2 & 7 \end{bmatrix} \begin{bmatrix} -1 & 0 & 3 \\ -2 & 4 & 1 \end{bmatrix}$

~~2×2~~ ~~2×2~~ (2×2)

11. $\begin{bmatrix} 3 & 10 \\ 8 & -5 \end{bmatrix} \begin{bmatrix} -2 & 9 \\ 5 & -3 \end{bmatrix}$

~~1×3~~ ~~3×1~~ (1×1)

7. $\begin{bmatrix} 4 & 5 & -4 \end{bmatrix} \begin{bmatrix} 5 \\ 6 \\ 11 \end{bmatrix}$

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12. $\begin{bmatrix} 3 & -7 & 6 \\ 11 & -4 & 0 \end{bmatrix} \begin{bmatrix} 2 & -8 & 1 \\ 8 & -2 & -5 \end{bmatrix}$

~~2×3~~ ~~2×3~~
 not possible

8. $\begin{bmatrix} -1 & 7 \\ 9 & 0 \end{bmatrix} \begin{bmatrix} 2 & 1 & 8 \\ 7 & -3 & 7 \\ 4 & 1 & 0 \end{bmatrix}$

~~2×2~~ ~~3×3~~
 not possible

13. $\begin{bmatrix} \frac{1}{2} & -1 \\ 2 & \frac{1}{4} \end{bmatrix} \begin{bmatrix} 0 & \frac{3}{4} \\ 3 & -\frac{1}{4} \end{bmatrix}$

~~2×2~~ ~~2×2~~ (2×2)

9. $\begin{bmatrix} 6 & -8 \\ 3 & 5 \\ 0 & 4 \end{bmatrix} \begin{bmatrix} -2 & 0 & 4 \\ -5 & 11 & 2 \end{bmatrix}$

~~3×2~~ ~~2×3~~
 (3×3)

14. $\begin{bmatrix} 0.2 & 1.4 \\ 0.4 & 1.5 \end{bmatrix} \begin{bmatrix} -3 & 2.1 \\ 0.5 & 2.2 \end{bmatrix}$

~~2×2~~ ~~2×2~~ (2×2)

10. $\begin{bmatrix} 1 \\ 4 \end{bmatrix} \begin{bmatrix} 5 & 3 & 4 \end{bmatrix}$

~~2×1~~ ~~1×3~~
 (2×3)

15. $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} \frac{1}{3} & -2 \\ 5 & \frac{2}{6} \end{bmatrix}$

~~2×2~~ ~~2×2~~
 (2×2)

$$6. \begin{bmatrix} -1-8 & 0+16 & 3+4 \\ 2-14 & 0+28 & -6+7 \end{bmatrix} = \begin{bmatrix} -9 & 16 & 7 \\ -12 & 28 & 1 \end{bmatrix}$$

$$7. \begin{bmatrix} 20+30-44 \end{bmatrix} = \begin{bmatrix} 6 \end{bmatrix}$$

8. X

$$9. \begin{bmatrix} -12+40 & 0-88 & 24-16 \\ -6-25 & 0+55 & 12+10 \\ 0-20 & 0+44 & 0+8 \end{bmatrix} = \begin{bmatrix} 28 & -88 & 8 \\ -31 & 55 & 22 \\ -20 & 44 & 8 \end{bmatrix}$$

$$10. \begin{bmatrix} 5 & 3 & 4 \\ 20 & 12 & 16 \end{bmatrix}$$

$$11. \begin{bmatrix} -6+50 & 27-30 \\ -16-25 & 72+15 \end{bmatrix} = \begin{bmatrix} 44 & -3 \\ -41 & 87 \end{bmatrix}$$

12. X

$$13. \begin{bmatrix} 0-3 & \overset{3/8+1/4}{3/8+\frac{1}{4}} \\ 0+3/4 & \overset{3/2-1/16}{\underset{24/16-1/16}{3/2-\frac{1}{16}}} \end{bmatrix} = \begin{bmatrix} -3 & 5/8 \\ 3/4 & 23/16 \end{bmatrix}$$

$$14. \begin{bmatrix} -.06+.7 & .42+3.08 \\ -.12+.75 & .84+3.3 \end{bmatrix} = \begin{bmatrix} .64 & 3.5 \\ .63 & 4.14 \end{bmatrix}$$

$$15. \begin{bmatrix} 1/3+0 & -2+0 \\ 0+5 & 0+1/3 \end{bmatrix} = \begin{bmatrix} 1/3 & -2 \\ 5 & 1/3 \end{bmatrix}$$