Multiplying Matrices 1 WS Name _____

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

1. A: 3x3, B: 3x1 yes 3x1
2. A: 2x3, B: 2x3 No
3. A: 3x1, B: 1x3 yes 3x3
4. A: 3x3, B: 1x3 No
5. A: 2x2, B: 2x2 yes 2x2

Find the product. If not defined, state the reason. *Answers on next page →

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

2x2 2x3 = 2x3

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

1x3 3x1 = 1x1

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

2x2 3x3 Not Possible

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

3x2 2x3 = 3x3

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

2x1 1x3 = 2x3

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

2x2 2x2 = 2x2

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

2x3 2x3 Not Possible

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

2x2 2x2 = 2x2

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

2x2 2x2 = 2x2

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

2x2 2x2 = 2x2

ultiply Row x Column
(across x down)

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) Not Possible

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) Not Possible

13) $\begin{bmatrix} 0-3 & 3/8+1/4 \\ 0+3/4 & 3/2-1/16 \end{bmatrix} = \begin{bmatrix} -3 & 5/8 \\ 3/4 & 23/16 \end{bmatrix}$

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