

1. $A = \langle -1, -56 \rangle$, $B = \langle 22, 30 \rangle$

① A B
 $-1 \quad 22 = -22$
 $-56 \quad 30 = -1680$
 $\rightarrow (-22) + (-1680) = -1702$

2. $A = \langle -14, 22 \rangle$, $B = \langle -91, -52 \rangle$

② A B
 $-14 \quad -91 = 1274$
 $22 \quad -52 = -1144$
 $\rightarrow (1274) + (-1144) = 130$

3. $A = \langle -6, -11 \rangle$, $B = \langle 74, 73 \rangle$

③ A B
 $-6 \quad 74 = -444$
 $-11 \quad 73 = -803$
 $\rightarrow (-444) + (-803) = -1247$

4. $A = \langle 29, 59 \rangle$, $B = \langle -27, 9 \rangle$

④ A B
 $29 \quad -27 = -783$
 $59 \quad 9 = 531$
 $\rightarrow (-783) + (531) = -252$

5. $A = \langle 49, -75 \rangle$, $B = \langle -12, 75 \rangle$

⑤ A B
 $49 \quad -12 = -588$
 $-75 \quad 75 = -5625$
 $\rightarrow (-588) + (-5625) = -6213$

6. $A = \langle -5, -56 \rangle$, $B = \langle 84, -3 \rangle$

⑥ A B
 $-5 \quad 84 = -420$
 $-56 \quad -3 = 168$
 $\rightarrow (-420) + (168) = -252$

7. $A = \langle -49, -86 \rangle$, $B = \langle -16, 54 \rangle$

⑦ A B
 -49 $-16 = 784$
 -86 $54 = -4644$ $\rightarrow (784) + (-4644) = -3860$

8. $A = \langle -96, 37 \rangle$, $B = \langle -76, 49 \rangle$

⑧ A B
 -96 $-76 = 7296$
 37 $49 = 1813$ $\rightarrow (7296) + (1813) = 9109$

9. $A = \langle 53, -99 \rangle$, $B = \langle 60, -83 \rangle$

⑨ A B
 53 $60 = 3180$
 -99 $-83 = 8217$ $\rightarrow (8217) + (3180) = 11397$

10. $A = \langle 74, -36 \rangle$, $B = \langle 41, 13 \rangle$

⑩ A B
 74 $41 = 3034$
 -36 $13 = -468$ $\rightarrow (3034) + (-468) = 2566$

11. $A = \langle 7i, -3j \rangle$, $B = \langle -5i, -9j \rangle$

⑪ A B
 $7i$ $-5i = -35i$
 $-3j$ $-9j = 27j$ $\rightarrow (-35) + (27) = -8$

12. $A = \langle -10i, 3j \rangle$, $B = \langle -3i, -7j \rangle$

⑫ A B
 $-10i$ $-3i = 30i$
 $3j$ $-7j = -21j$ $\rightarrow (30) + (-21) = 9$

13. $A = \langle -7i, 8j \rangle,$

$B = \langle 3i, -j \rangle$

$\textcircled{13}$ A B
 $-7i$ $3i =$ $-21i$ $(-21) + (-8) = -29$
 $8j$ $-j =$ $-8j$

14. $A = \langle 6i, 7j \rangle,$

$B = \langle 2i, 9j \rangle$

$\textcircled{14}$ A B
 $6i$ $2i =$ $12i$ $(12) + (63) = 75$
 $7j$ $9j =$ $63j$

15. $A = \langle 10i, -9j \rangle,$

$B = \langle i, -4j \rangle$

$\textcircled{15}$ A B
 $10i$ $i =$ $10i$ $(10) + (36) = 46$
 $-9j$ $-4j =$ $36j$

16. $A = \langle 3i, -2j \rangle,$

$B = \langle -3i, 7j \rangle$

$\textcircled{16}$ A B
 $3i$ $-3i =$ $-9i$ $(-9) + (-14) = -23$
 $-2j$ $7j =$ $-14j$

17. $A = \langle -4i, -3j \rangle,$

$B = \langle 8i, -5j \rangle$

$\textcircled{17}$ A B
 $-4i$ $8i =$ $-32i$ $(-32) + (15) = -17$
 $-3j$ $-5j =$ $15j$

18. $A = \langle -10i, 2j \rangle$, $B = \langle -9i, 6j \rangle$

Handwritten work for problem 18:

$$\begin{array}{rcl} \textcircled{18} & A & B \\ & -10i & -9i = 90i \\ & 2j & 6j = 12j \end{array} \quad (90) + (12) = 112$$

19. $A = \langle -i, -4j \rangle$, $B = \langle 6i, -4j \rangle$

Handwritten work for problem 19:

$$\begin{array}{rcl} \textcircled{19} & A & B \\ & -i & 6i = -6i \\ & -4j & -4j = 16j \end{array} \quad (-6) + (16) = 10$$

20. $A = \langle 4i, -j \rangle$, $B = \langle -2i, j \rangle$

Handwritten work for problem 20:

$$\begin{array}{rcl} \textcircled{20} & A & B \\ & 4i & -2i = -8i \\ & -j & j = -j \end{array} \quad (-8) + (-1) = -9$$

21. $A = \langle -5, -9, -8 \rangle$, $B = \langle 5, -10, 7 \rangle$

Handwritten work for problem 21:

$$\begin{array}{lcl} \textcircled{21} & A = \langle -5, -9, -8 \rangle & (-9 \cdot 7) - (-8 \cdot -10) = -143 \\ & B = \langle 5, -10, 7 \rangle & (-5 \cdot 7) - (-8 \cdot 5) = -5 \\ & & (-5 \cdot -10) - (-9 \cdot 5) = 95 \end{array}$$

22. $A = \langle -3, 7, -3 \rangle$, $B = \langle -9, 3, -7 \rangle$

Handwritten work for problem 22:

$$\begin{array}{lcl} \textcircled{22} & A = \langle -3, 7, -3 \rangle & (-7 \cdot -7) - (-3 \cdot 3) = -40 \\ & B = \langle -9, 3, -7 \rangle & (-3 \cdot -7) - (-3 \cdot -9) = 6 \\ & & (-3 \cdot 3) - (7 \cdot -9) = 54 \end{array}$$

23. $A = \langle -8, -10, 3 \rangle$, $B = \langle 4, -6, 6 \rangle$

$$\begin{aligned} (23) \quad A &= \langle -8, -10, 3 \rangle & (-10 \cdot 6) - (3 \cdot -6) &= -42 \\ B &= \langle 4, -6, 6 \rangle & (-8 \cdot 6) - (3 \cdot 4) &= 60 \\ & & (-8 \cdot -6) - (-10 \cdot 4) &= 88 \end{aligned}$$

24. $A = \langle -7, -6, 8 \rangle$, $B = \langle 2, -1, 9 \rangle$

$$\begin{aligned} (24) \quad A &= \langle -7, -6, 8 \rangle & (-6 \cdot 9) - (8 \cdot -1) &= -46 \\ B &= \langle 2, -1, 9 \rangle & (-7 \cdot 9) - (8 \cdot 2) &= 79 \\ & & (-7 \cdot -1) - (-6 \cdot 2) &= 19 \end{aligned}$$

25. $A = \langle -1, -10, 9 \rangle$, $B = \langle 6, -7, -2 \rangle$

$$\begin{aligned} (25) \quad A &= \langle -1, -10, 9 \rangle & (-10 \cdot -2) - (9 \cdot -7) &= 83 \\ B &= \langle 6, -7, -2 \rangle & (-1 \cdot -2) - (9 \cdot 6) &= 52 \\ & & (-1 \cdot -7) - (-10 \cdot 6) &= 67 \end{aligned}$$

26. $A = \langle -3, 7, -5 \rangle$, $B = \langle 5, 9, -8 \rangle$

$$\begin{aligned} (26) \quad A &= \langle -3, 7, -5 \rangle & (7 \cdot -8) - (-5 \cdot 9) &= -11 \\ B &= \langle 5, 9, -8 \rangle & (-3 \cdot -8) - (-5 \cdot 5) &= -49 \\ & & (-3 \cdot 9) - (7 \cdot 5) &= -62 \end{aligned}$$

27. $A = \langle -7, 4, 5 \rangle$, $B = \langle -10, 3, 9 \rangle$

$$\begin{aligned} (27) \quad A &= \langle -7, 4, 5 \rangle & (4 \cdot 9) - (5 \cdot 3) &= 21 \\ B &= \langle -10, 3, 9 \rangle & (-7 \cdot 9) - (5 \cdot -10) &= 13 \\ & & (-7 \cdot 3) - (4 \cdot -10) &= 19 \end{aligned}$$

28. $A = \langle -4, -3, -7 \rangle$, $B = \langle 9, -5, -4 \rangle$

$$\begin{aligned} \textcircled{28} \quad A &= \langle -4, -3, -7 \rangle & \begin{pmatrix} -3 & -4 \end{pmatrix} - \begin{pmatrix} -7 & -5 \end{pmatrix} &= -23 \\ B &= \langle 9, -5, -4 \rangle & \begin{pmatrix} -4 & -4 \end{pmatrix} - \begin{pmatrix} -7 & 9 \end{pmatrix} &= -79 \\ & & \begin{pmatrix} -4 & -5 \end{pmatrix} - \begin{pmatrix} -3 & 9 \end{pmatrix} &= 47 \end{aligned}$$

29. $A = \langle -6, 9, 5 \rangle$, $B = \langle -7, 3, 1 \rangle$

$$\begin{aligned} \textcircled{29} \quad A &= \langle -6, 9, 5 \rangle & \begin{pmatrix} 9 & 1 \end{pmatrix} - \begin{pmatrix} 5 & 3 \end{pmatrix} &= -6 \\ B &= \langle -7, 3, 1 \rangle & \begin{pmatrix} -6 & 1 \end{pmatrix} - \begin{pmatrix} 5 & -7 \end{pmatrix} &= -29 \\ & & \begin{pmatrix} -6 & 3 \end{pmatrix} - \begin{pmatrix} 9 & -7 \end{pmatrix} &= 45 \end{aligned}$$

30. $A = \langle -5, -8, 6 \rangle$, $B = \langle 5, -2, 7 \rangle$

$$\begin{aligned} \textcircled{30} \quad A &= \langle -5, -8, 6 \rangle & \begin{pmatrix} -8 & 7 \end{pmatrix} - \begin{pmatrix} 6 & -2 \end{pmatrix} &= -44 \\ B &= \langle 5, -2, 7 \rangle & \begin{pmatrix} -5 & 7 \end{pmatrix} - \begin{pmatrix} 6 & 5 \end{pmatrix} &= 65 \\ & & \begin{pmatrix} -5 & -2 \end{pmatrix} - \begin{pmatrix} -8 & 5 \end{pmatrix} &= 50 \end{aligned}$$