

Difficulty level: Advanced

1. Multiply the vector $(-5, -1)$ by the scalar $\sqrt{11}$.

- ☐ $(-5\sqrt{11}, -1 - \sqrt{11})$
- ☐ $(\sqrt{11} - 5, \sqrt{11} - 1)$
- ☐ $(5 + \sqrt{11}, 1 + \sqrt{11})$
- ☐ $(-5\sqrt{11}, -\sqrt{11})$

2. Calculate the product: $\sqrt{11} (7, \frac{7}{9})$.

- ☐ $(7\sqrt{11}, \frac{7}{9} - \sqrt{11})$
- ☐ $(7\sqrt{11}, \frac{7\sqrt{11}}{9})$
- ☐ $(\sqrt{11} - 7, \sqrt{11} - \frac{7}{9})$
- ☐ $(7 + \sqrt{11}, \frac{7}{9} + \sqrt{11})$

3. Calculate the product: $\sqrt{7} (-7, \frac{4}{7})$.

- ☐ $(7 + \sqrt{7}, \sqrt{7} - \frac{4}{7})$
- ☐ $(-7\sqrt{7}, \frac{4}{\sqrt{7}})$
- ☐ $(-7\sqrt{7}, \frac{4}{7} - \sqrt{7})$
- ☐ $(\sqrt{7} - 7, \frac{4}{7} + \sqrt{7})$

4. Compute the product of the scalar $\sqrt{7}$ and vector $(5, 4)$.

- ☐ $(\sqrt{7} - 5, \sqrt{7} - 4)$
- ☐ $(5, 4\sqrt{7})$
- ☐ $(5 + \sqrt{7}, 4 + \sqrt{7})$
- ☐ $(5\sqrt{7}, 4\sqrt{7})$

5. Compute the product of the scalar $\sqrt{7}$ and vector $(\frac{1}{2}, 3)$.

- ☐ $(\frac{1}{2} + \sqrt{7}, 3 + \sqrt{7})$
- ☐ $(\frac{\sqrt{7}}{2}, 3\sqrt{7})$
- ☐ $(\frac{\sqrt{7}}{2}, \frac{3}{\sqrt{7}})$
- ☐ $(\sqrt{7} - \frac{1}{2}, \sqrt{7} - 3)$

6. Calculate the product: $-\sqrt{11}(-\frac{3}{5}, -\frac{8}{9})$.

- ☐ $(\frac{3\sqrt{11}}{5}, \sqrt{11} - \frac{8}{9})$
- ☐ $(-\frac{3}{5} - \sqrt{11}, -\frac{8}{9} - \sqrt{11})$
- ☐ $(\frac{3\sqrt{11}}{5}, \frac{8\sqrt{11}}{9})$
- ☐ $(\frac{3}{5} - \sqrt{11}, \frac{8}{9} - \sqrt{11})$

7. Multiply the vector $(-6, -\frac{7}{5})$ by the scalar $-\sqrt{5}$.

- ☐ $(6\sqrt{5}, \frac{7}{\sqrt{5}})$
- ☐ $(6 - \sqrt{5}, \frac{7}{5} - \sqrt{5})$
- ☐ $(-6 - \sqrt{5}, -\frac{7}{5} - \sqrt{5})$
- ☐ $(6\sqrt{5}, \frac{7}{5\sqrt{5}})$

8. Compute the product of the scalar $-\sqrt{5}$ and vector $(-3, 7)$.

- ☐ $(3\sqrt{5}, 7 + \sqrt{5})$
- ☐ $(-3 - \sqrt{5}, 7 - \sqrt{5})$
- ☐ $(3 - \sqrt{5}, -7 - \sqrt{5})$
- ☐ $(3\sqrt{5}, -7\sqrt{5})$

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9. Compute the product:

$$-\sqrt{7} \left(-3, -\frac{7}{6}\right).$$

- ☐ $\left(3 - \sqrt{7}, \frac{7}{6} - \sqrt{7}\right)$
- ☐ $\left(-3 - \sqrt{7}, -\frac{7}{6} - \sqrt{7}\right)$
- ☐ $\left(-3, \frac{7\sqrt{7}}{6}\right)$
- ☐ $\left(3\sqrt{7}, \frac{7\sqrt{7}}{6}\right)$

10. Compute the product of the scalar $\sqrt{5}$ and vector $\left(-\frac{9}{2}, -6\right)$.

- ☐ $\left(\frac{9}{2} + \sqrt{5}, 6 + \sqrt{5}\right)$
- ☐ $\left(-\frac{9\sqrt{5}}{2}, -6 - \sqrt{5}\right)$
- ☐ $\left(\sqrt{5} - \frac{9}{2}, \sqrt{5} - 6\right)$
- ☐ $\left(-\frac{9\sqrt{5}}{2}, -6\sqrt{5}\right)$

11. Compute the product of the scalar $\sqrt{11}$ and vector $\left(-\frac{8}{5}, \frac{5}{8}\right)$.

- ☐ $\left(-\frac{8}{5}, \frac{5\sqrt{11}}{8}\right)$
- ☐ $\left(\sqrt{11} - \frac{8}{5}, \frac{5}{8} + \sqrt{11}\right)$
- ☐ $\left(-\frac{8\sqrt{11}}{5}, \frac{5\sqrt{11}}{8}\right)$
- ☐ $\left(\frac{8}{5} + \sqrt{11}, \sqrt{11} - \frac{5}{8}\right)$

12. Multiply the vector $\left(-\frac{3}{5}, 3\right)$ by the scalar $\sqrt{3}$.

- ☐ $\left(\sqrt{3} - \frac{3}{5}, 3 + \sqrt{3}\right)$
- ☐ $\left(\frac{3}{5} + \sqrt{3}, \sqrt{3} - 3\right)$
- ☐ $\left(-\frac{3\sqrt{3}}{5}, \sqrt{3}\right)$
- ☐ $\left(-\frac{3\sqrt{3}}{5}, 3\sqrt{3}\right)$

13. Compute the product of the scalar $\sqrt{11}$ and vector $(-4, -\frac{9}{5})$.

- ☐ $(-4\sqrt{11}, -\frac{9\sqrt{11}}{5})$
- ☐ $(4 + \sqrt{11}, \frac{9}{5} + \sqrt{11})$
- ☐ $(-4\sqrt{11}, -\frac{9}{5\sqrt{11}})$
- ☐ $(\sqrt{11} - 4, \sqrt{11} - \frac{9}{5})$

14. Compute the product of the scalar $\sqrt{7}$ and vector $(6, -1)$.

- ☐ $(6 + \sqrt{7}, \sqrt{7} - 1)$
- ☐ $(6\sqrt{7}, -\sqrt{7})$
- ☐ $(\sqrt{7} - 6, 1 + \sqrt{7})$
- ☐ $(6\sqrt{7}, -1 - \sqrt{7})$

15. Compute the product of the scalar $-\sqrt{3}$ and vector $(\frac{9}{2}, -\frac{7}{2})$.

- ☐ $(-\frac{9}{2} - \sqrt{3}, \frac{7}{2} - \sqrt{3})$
- ☐ $(\frac{9}{2} - \sqrt{3}, -\frac{7}{2} - \sqrt{3})$
- ☐ $(-\frac{9\sqrt{3}}{2}, \frac{7\sqrt{3}}{2})$
- ☐ $(\frac{9}{2}, \frac{7\sqrt{3}}{2})$

16. Compute the product of the scalar $-\sqrt{7}$ and vector $(5, 7)$.

- ☐ $(-5\sqrt{7}, -\sqrt{7})$
- ☐ $(5 - \sqrt{7}, 7 - \sqrt{7})$
- ☐ $(-5\sqrt{7}, -7\sqrt{7})$
- ☐ $(-5 - \sqrt{7}, -7 - \sqrt{7})$

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17. Calculate the product:

$$\sqrt{3} (-7, 6).$$

- ☐ $(-7\sqrt{3}, 2\sqrt{3})$
- ☐ $(7 + \sqrt{3}, \sqrt{3} - 6)$
- ☐ $(\sqrt{3} - 7, 6 + \sqrt{3})$
- ☐ $(-7\sqrt{3}, 6\sqrt{3})$

18. Calculate the product:

$$\sqrt{5} (-4, \frac{8}{5}).$$

- ☐ $(-4\sqrt{5}, \frac{8}{\sqrt{5}})$
- ☐ $(\sqrt{5} - 4, \frac{8}{5} + \sqrt{5})$
- ☐ $(4 + \sqrt{5}, \sqrt{5} - \frac{8}{5})$
- ☐ $(-4\sqrt{5}, \frac{8}{5} - \sqrt{5})$

19. Calculate the product:

$$-\sqrt{3} (\frac{4}{7}, 1).$$

- ☐ $(\frac{4}{7} - \sqrt{3}, 1 - \sqrt{3})$
- ☐ $(-\frac{4\sqrt{3}}{7}, 1 + \sqrt{3})$
- ☐ $(-\frac{4\sqrt{3}}{7}, -\sqrt{3})$
- ☐ $(-\frac{4}{7} - \sqrt{3}, -1 - \sqrt{3})$

20. Compute the product of the scalar $\sqrt{3}$ and vector $(-\frac{1}{2}, \frac{2}{3})$.

- ☐ $(-\frac{\sqrt{3}}{2}, \frac{2}{3\sqrt{3}})$
- ☐ $(-\frac{\sqrt{3}}{2}, \frac{2}{\sqrt{3}})$
- ☐ $(\frac{1}{2} + \sqrt{3}, \sqrt{3} - \frac{2}{3})$
- ☐ $(\sqrt{3} - \frac{1}{2}, \frac{2}{3} + \sqrt{3})$