

Difficulty level: Advanced

1. Compute the product of the scalar $-\sqrt{3}$ and vector $(\frac{4}{5}, 3, -1)$.

- ☐ $(-\frac{4\sqrt{3}}{5}, -3\sqrt{3}, \sqrt{3})$
- ☐ $(-\frac{4\sqrt{3}}{5}, 3+\sqrt{3}, \sqrt{3})$
- ☐ $(-\frac{4}{5}-\sqrt{3}, -3-\sqrt{3}, 1-\sqrt{3})$
- ☐ $(\frac{4}{5}-\sqrt{3}, 3-\sqrt{3}, -1-\sqrt{3})$

2. Compute the product: $\sqrt{11}(-7, -\frac{1}{2}, -\frac{3}{4})$.

- ☐ $(\sqrt{11}-7, \sqrt{11}-\frac{1}{2}, \sqrt{11}-\frac{3}{4})$
- ☐ $(7+\sqrt{11}, \frac{1}{2}+\sqrt{11}, \frac{3}{4}+\sqrt{11})$
- ☐ $(-7\sqrt{11}, -\frac{\sqrt{11}}{2}, -\frac{3\sqrt{11}}{4})$
- ☐ $(-7\sqrt{11}, -\frac{1}{2\sqrt{11}}, -\frac{3\sqrt{11}}{4})$

3. Multiply the vector $(-6, -\frac{7}{8}, -\frac{2}{7})$ by the scalar $\sqrt{5}$.

- ☐ $(6 + \sqrt{5}, \frac{7}{8} + \sqrt{5}, \frac{2}{7} + \sqrt{5})$
- ☐ $(\sqrt{5} - 6, \sqrt{5} - \frac{7}{8}, \sqrt{5} - \frac{2}{7})$
- ☐ $(-6\sqrt{5}, -\frac{7}{8} - \sqrt{5}, -\frac{2\sqrt{5}}{7})$
- ☐ $(-6\sqrt{5}, -\frac{7\sqrt{5}}{8}, -\frac{2\sqrt{5}}{7})$

4. Compute the product:
 $-\sqrt{3}(6, 6, 7)$.

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

5. Calculate the product:
 $\sqrt{3}(-4, -4, \frac{9}{8})$.

- ☐ $(-4\sqrt{3}, -\frac{4}{\sqrt{3}}, \frac{9\sqrt{3}}{8})$
- ☐ $(4 + \sqrt{3}, 4 + \sqrt{3}, \sqrt{3} - \frac{9}{8})$
- ☐ $(-4\sqrt{3}, -4\sqrt{3}, \frac{9\sqrt{3}}{8})$
- ☐ $(\sqrt{3} - 4, \sqrt{3} - 4, \frac{9}{8} + \sqrt{3})$

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

- ☐ $(\sqrt{5} - \frac{6}{5}, 5 + \sqrt{5}, \sqrt{5} - 3)$
- ☐ $(\frac{6}{5}, -5\sqrt{5}, 3\sqrt{5})$
- ☐ $(\frac{6}{5} + \sqrt{5}, \sqrt{5} - 5, 3 + \sqrt{5})$
- ☐ $(\frac{6}{\sqrt{5}}, -5\sqrt{5}, 3\sqrt{5})$

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7. Calculate the product:

$$-\sqrt{7} \left(\frac{3}{2}, -\frac{3}{7}, 6 \right).$$

- ☐ $\left(\frac{3}{2} - \sqrt{7}, -\frac{3}{7} - \sqrt{7}, 6 - \sqrt{7} \right)$
- ☐ $\left(-\frac{3\sqrt{7}}{2}, \frac{3}{\sqrt{7}}, -6\sqrt{7} \right)$
- ☐ $\left(-\frac{3}{2} - \sqrt{7}, \frac{3}{7} - \sqrt{7}, -6 - \sqrt{7} \right)$
- ☐ $\left(-\frac{3\sqrt{7}}{2}, \frac{3}{7\sqrt{7}}, -6\sqrt{7} \right)$

8. Multiply the vector $(-5, -1, -2)$ by thescalar $\sqrt{3}$.

- ☐ $(5 + \sqrt{3}, 1 + \sqrt{3}, 2 + \sqrt{3})$
- ☐ $(-5\sqrt{3}, -\sqrt{3}, -2\sqrt{3})$
- ☐ $(\sqrt{3} - 5, \sqrt{3} - 1, \sqrt{3} - 2)$
- ☐ $\left(-5\sqrt{3}, -\frac{1}{\sqrt{3}}, -2\sqrt{3} \right)$

9. Multiply the vector $(1, -2, 1)$ by thescalar $\sqrt{3}$.

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

10. Calculate the product:

$$-\sqrt{5} (3, 5, 2).$$

- ☐ $(-3\sqrt{5}, -5\sqrt{5}, -2\sqrt{5})$
- ☐ $(-3\sqrt{5}, -\sqrt{5}, -2\sqrt{5})$
- ☐ $(3 - \sqrt{5}, 5 - \sqrt{5}, 2 - \sqrt{5})$
- ☐ $(-3 - \sqrt{5}, -5 - \sqrt{5}, -2 - \sqrt{5})$

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11. Multiply the vector $(-1, \frac{9}{4}, -1)$ by the scalar $-\sqrt{5}$.

- ☐ $(1 - \sqrt{5}, -\frac{9}{4} - \sqrt{5}, 1 - \sqrt{5})$
- ☐ $(-1, -\frac{9\sqrt{5}}{4}, \sqrt{5})$
- ☐ $(-1 - \sqrt{5}, \frac{9}{4} - \sqrt{5}, -1 - \sqrt{5})$
- ☐ $(\sqrt{5}, -\frac{9\sqrt{5}}{4}, \sqrt{5})$

12. Compute the product of the scalar $-\sqrt{11}$ and vector $(1, -3, -2)$.

- ☐ $(-\sqrt{11}, 3\sqrt{11}, 2\sqrt{11})$
- ☐ $(-\sqrt{11}, \frac{3}{\sqrt{11}}, 2\sqrt{11})$
- ☐ $(1 - \sqrt{11}, -3 - \sqrt{11}, -2 - \sqrt{11})$
- ☐ $(-1 - \sqrt{11}, 3 - \sqrt{11}, 2 - \sqrt{11})$

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13. Compute the product of the scalar $\sqrt{11}$ and vector $(-\frac{3}{2}, -\frac{5}{9}, 7)$.

- ☐ $(\frac{3}{2} + \sqrt{11}, \frac{5}{9} + \sqrt{11}, \sqrt{11} - 7)$
- ☐ $(\sqrt{11} - \frac{3}{2}, \sqrt{11} - \frac{5}{9}, 7 + \sqrt{11})$
- ☐ $(-\frac{3\sqrt{11}}{2}, -\frac{5}{9\sqrt{11}}, 7\sqrt{11})$
- ☐ $(-\frac{3\sqrt{11}}{2}, -\frac{5\sqrt{11}}{9}, 7\sqrt{11})$

14. Compute the product of the scalar $\sqrt{5}$ and vector $(-3, 3, -2)$.

- ☐ $(3 + \sqrt{5}, \sqrt{5} - 3, 2 + \sqrt{5})$
- ☐ $(\sqrt{5} - 3, 3 + \sqrt{5}, \sqrt{5} - 2)$
- ☐ $(-3\sqrt{5}, \frac{3}{\sqrt{5}}, -2\sqrt{5})$
- ☐ $(-3\sqrt{5}, 3\sqrt{5}, -2\sqrt{5})$

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15. Compute the product:

$$-\sqrt{7} (3, 1, 2).$$

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

16. Multiply the vector $(5, -6, -4)$ by the

$$\text{scalar } -\sqrt{7}.$$

- ☐ $(5, 6\sqrt{7}, 4\sqrt{7})$
- ☐ $(5 - \sqrt{7}, -6 - \sqrt{7}, -4 - \sqrt{7})$
- ☐ $(-5\sqrt{7}, 6\sqrt{7}, 4\sqrt{7})$
- ☐ $(-5 - \sqrt{7}, 6 - \sqrt{7}, 4 - \sqrt{7})$

17. Compute the product:

$$\sqrt{5} (-3, \frac{9}{5}, 1).$$

- ☐ $(\sqrt{5} - 3, \frac{9}{5} + \sqrt{5}, 1 + \sqrt{5})$
- ☐ $(-3, \frac{9}{\sqrt{5}}, \sqrt{5})$
- ☐ $(-3\sqrt{5}, \frac{9}{\sqrt{5}}, \sqrt{5})$
- ☐ $(3 + \sqrt{5}, \sqrt{5} - \frac{9}{5}, \sqrt{5} - 1)$

18. Compute the product of the

$$\text{scalar } \sqrt{3} \text{ and vector } (-1, -7, \frac{2}{3}).$$

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

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19. Multiply the vector $(4, 5, 2)$ by the scalar $\sqrt{3}$.

- ☐ $(4 + \sqrt{3}, 5 + \sqrt{3}, 2 + \sqrt{3})$
- ☐ $(4\sqrt{3}, 5\sqrt{3}, 2\sqrt{3})$
- ☐ $(4\sqrt{3}, 5\sqrt{3}, 2)$
- ☐ $(\sqrt{3} - 4, \sqrt{3} - 5, \sqrt{3} - 2)$

20. Compute the product of the scalar $-\sqrt{5}$ and vector $(\frac{5}{7}, -5, -\frac{4}{3})$.

- ☐ $(-\frac{5}{7} - \sqrt{5}, 5 - \sqrt{5}, \frac{4}{3} - \sqrt{5})$
- ☐ $(-\frac{5\sqrt{5}}{7}, \sqrt{5}, \frac{4\sqrt{5}}{3})$
- ☐ $(\frac{5}{7} - \sqrt{5}, -5 - \sqrt{5}, -\frac{4}{3} - \sqrt{5})$
- ☐ $(-\frac{5\sqrt{5}}{7}, 5\sqrt{5}, \frac{4\sqrt{5}}{3})$