

Worksheet - Adding and Subtracting Radicals

Perform the indicated operations and simplify as completely as possible.

1. a) $x + 2x + 3x$

b) $\sqrt{5} + 2\sqrt{5} + 3\sqrt{5}$

2. a) $4x - x$

b) $4\sqrt{6} - \sqrt{6}$

3. a) $3x + 5y$

b) $3\sqrt{5} + 5\sqrt{3}$

4. a) $x + x$

b) $\sqrt{5} + \sqrt{5}$

5. $\sqrt{5} + 3\sqrt{7} - 4\sqrt{5} - 5\sqrt{7}$

6. $3\sqrt{3} + 4\sqrt{3} - \sqrt{2}$

7. a) $2(x - y) + 3(y - x)$

b) $2(\sqrt{5} - \sqrt{3}) + 3(\sqrt{3} - \sqrt{5})$

8. $5(3\sqrt{6} + 2\sqrt{7}) - 4(\sqrt{7} - 2\sqrt{6})$

9. $6(\sqrt{m} - \sqrt{n}) - (3\sqrt{m} + 6\sqrt{n})$

10. $\sqrt{8} + \sqrt{18}$

11. $\sqrt{25} + \sqrt{24}$

12. $\sqrt{20} - 5$

13. $4\sqrt{12} - \sqrt{75}$

14. $\sqrt{20} + \sqrt{40} + \sqrt{60}$

15. $3\sqrt{72} - 5\sqrt{32}$

16. $5\sqrt{36} + 4\sqrt{30}$

17. $\sqrt{25x} + \sqrt{36x}$

18. $\sqrt{12w} + \sqrt{27w}$

19. $\sqrt{45x^3} - \sqrt{20x^3}$

20. $\sqrt{20x^8} - \sqrt{80x^8}$

21. $5\sqrt{16x^4} + 3\sqrt{25x^4}$

Answers to odd problems:

1. a) $6x$

b) $6\sqrt{5}$

3. a) $3x + 5y$

b) $3\sqrt{5} + 5\sqrt{3}$

5. $-3\sqrt{5} - 2\sqrt{7}$

7. a) $-x + y$

b) $-\sqrt{5} + \sqrt{3}$

9. $3\sqrt{m} - 12\sqrt{n}$

11. $5 + 2\sqrt{6}$

13. $3\sqrt{3}$

15. $-2\sqrt{2}$

17. $11\sqrt{x}$

19. $x\sqrt{5x}$

21. $35x^2$