Algebra Lesson 10-3C Operations with Radicals

Objective: Today we will simplify sums and differences of radicals.

Due Next Class: 10-3C p.503 18-26 even, 39, 40, 77-79 all.

Due Today: 10-3B p.503 #10, 12, 17-27 odds. Challenge #29

10) $4\sqrt{2}$

12) $4\sqrt{2}$

17) $9 + \sqrt{3}$

19) $3\sqrt{5} + 2\sqrt{3}$

21) $6 - 5\sqrt{6}$

23) $58 - 10\sqrt{30}$

25) $43 + 4\sqrt{30}$

27) $23 - 5\sqrt{13}$

29) $-6\sqrt{2}$

Simplify each expression.

10. $\sqrt{18} + \sqrt{2}$

11. $2\sqrt{12} - 7\sqrt{3}$

12. $\sqrt{8} + 2\sqrt{2}$

13. $4\sqrt{5} - 2\sqrt{45}$

14. $3\sqrt{7} - \sqrt{28}$

15. $-4\sqrt{10} + 6\sqrt{40}$

16. $\sqrt{2}(\sqrt{8} - 4)$

17. $\sqrt{3}(\sqrt{27} + 1)$

18. $2\sqrt{3}(\sqrt{3} - 1)$

19. $\sqrt{3}(\sqrt{15} + 2)$

20. $\sqrt{2}(3 + 3\sqrt{2})$

21. $\sqrt{6}(\sqrt{6} - 5)$

22. $(3\sqrt{2} + \sqrt{3})(\sqrt{2} - 5\sqrt{3})$

23. $(2\sqrt{5} - \sqrt{6})(4\sqrt{5} - 3\sqrt{6})$

24. $(\sqrt{7} - 2)^2$

25. $(2\sqrt{10} + \sqrt{3})^2$

26. $(2\sqrt{11} + 5)(\sqrt{11} + 2)$

27. $(4 - \sqrt{13})(9 + \sqrt{13})$

$$(2\sqrt{5} - \sqrt{6})(4\sqrt{5} - 3\sqrt{6})$$

$2\sqrt{5}\cdot 4\sqrt{5} + 2\sqrt{5}\cdot(-3\sqrt{6}) - \sqrt{6}\cdot 4\sqrt{5} + \sqrt{6}\cdot 3\sqrt{6}$

$8\sqrt{25}$ $-6\sqrt{30}$ $-4\sqrt{30}$ $+ 3\sqrt{36}$

$8\cdot 5$ $3\cdot 6$

$40 - 6\sqrt{30} - 4\sqrt{30} + 18$

$54 - 10\sqrt{30}$

25. $(2\sqrt{10} + \sqrt{3})^2$

$(2\sqrt{10}+\sqrt{3})(2\sqrt{10}+\sqrt{3})$

$2\sqrt{10}\cdot 2\sqrt{10} + 2\sqrt{10}\sqrt{3} + \sqrt{3}\cdot 2\sqrt{10} + \sqrt{3}\sqrt{3}$

$4\cdot\sqrt{100}$

$40 + 2\sqrt{30} + 2\sqrt{30} + 3$

$43 + 4\sqrt{30}$

Simplify the radical expression.

1) $3\sqrt{7} - \sqrt{28}$

$3\sqrt{7} - \sqrt{4 \cdot 7}$

$3\sqrt{7} - 2\sqrt{7} = \sqrt{7}$

2) $\sqrt{2}(\sqrt{8} - 4)$

$\sqrt{16} - 4\sqrt{2} = 4 - 4\sqrt{2}$

$1^2 = 1$
$2^2 = 4$
$3^2 = 9$
$4^2 = 16$
$5^2 = 25$
$6^2 = 36$
$7^2 = 49$
$8^2 = 64$
$9^2 = 81$
$10^2 = 100$
$11^2 = 121$
$12^2 = 144$

18. $2\sqrt{3}(\sqrt{3} - 1)$

20. $\sqrt{2}(3 + 3\sqrt{2})$

22. $(3\sqrt{2} + \sqrt{3})(\sqrt{2} - 5\sqrt{3})$

24. $(\sqrt{7} - 2)^2$

26. $(2\sqrt{11} + 5)(\sqrt{11} + 2)$

39. $3\sqrt{2}(2 + \sqrt{6})$

40. $\sqrt{12} + 4\sqrt{75} - \sqrt{36}$

77. $\dfrac{\sqrt{12}}{\sqrt{18}}$

78. $\sqrt{5 \cdot 10}$

79. $\sqrt{40b^5}$