

Name: _____

Operations with Radical Expressions

Exercise 1: Simplify each expression

1) $4\sqrt{2} + 7\sqrt{2} - 9\sqrt{2}$

2) $-11\sqrt{3} + 5\sqrt{3} - 2\sqrt{3}$

3) $6\sqrt{7} - 11\sqrt{7} + 8\sqrt{7}$

4) $5\sqrt{12} - 7\sqrt{27} + 3\sqrt{75}$

5) $-8\sqrt{7} - 4\sqrt{28} + 7\sqrt{63}$

6) $3\sqrt{63} - 7\sqrt{112}$

7) $3\sqrt{18} - 5\sqrt{8}$

8) $-3\sqrt{50} + 4\sqrt{108} + 3\sqrt{18}$

9) $-11\sqrt{27} - 11\sqrt{32} + 4\sqrt{75}$

10) $6\sqrt{24} + 3\sqrt{150} - 3\sqrt{54}$

11) $-3\sqrt{50} - 2\sqrt{75} + 2\sqrt{242} - 9\sqrt{12}$

12) $5\sqrt{200} + 7\sqrt{98} - 4\sqrt{48} + 8\sqrt{108}$

Exercise 2: Simplify $2\sqrt{20} - \sqrt{180} - 3\sqrt{24} + 3\sqrt{96} + \sqrt{6} - 13\sqrt{363}$ **Exercise 3:** Write $-2\sqrt{50} + 5\sqrt{48} + 7\sqrt{98}$ in its simplest form.

Exercise 4: Perform then simplify

1) $(\sqrt{x}-1)^2$

2) $(\sqrt{x}-3)^2$

3) $(4\sqrt{x}-2\sqrt{2})^2$

4) $(2\sqrt{x}-3\sqrt{y})^2$

5) $(\sqrt{x}+5\sqrt{7})^2$

6) $(\sqrt{a}-\sqrt{b})^2$

7) $(\sqrt{x+7})^2 + (\sqrt{x+9})^2$

8) $(x\sqrt{3x-1})^2 + (\sqrt{3x-6})^2$

9) $(\sqrt{x}+4)(\sqrt{x}-7)$

10) $(4\sqrt{x}-9)(3\sqrt{x}+10)$

11) $(\sqrt{x}+4)(\sqrt{x}-4)$

12) $(\sqrt{x}+6)^2(\sqrt{x}-6)^2$

13) $(4\sqrt{x}+4)(\sqrt{x}-1)$

14) $(3\sqrt{x}+12)(\sqrt{x}-4)$