

Unit 3 – Lesson 5 – Worksheet

Describe each of the following transformations from the parent function $f(x) = \sqrt{x}$.

$$1. g(x) = 3\sqrt{x} - 1 \quad 2. g(x) = -\sqrt{x+3} \quad 3. g(x) = \frac{1}{3}\sqrt{x} \quad 4. g(x) = \sqrt{x-5} + 4$$

Simplify each radical expression.

5. $(81x^8y^4z^6)^{\frac{1}{2}}$

6. $(125x^6)^{\frac{1}{3}}$

7. $\sqrt{20x^{10}y^{15}z^{11}}$

8. $\sqrt[3]{3m^2n^3} \cdot \sqrt[3]{9m^3y^4}$

9. $(64ab^5)^{\frac{1}{2}} \cdot \sqrt{8ab^6}$

10. $\frac{\sqrt{54x^3y^3}}{\sqrt{3xy^2}}$

Operations with Radical Expressions

Simplify.

11. $(3 - \sqrt{24}) + (8 - \sqrt{96})$

12. $(4 + \sqrt{27}) - (-15 + \sqrt{48})$

13. $(2 + 3\sqrt{3})(9 - 7\sqrt{3})$

14. $(3 - \sqrt{2})(3 + \sqrt{2})$

Rationalizing the denominator

Simplify.

15. $\frac{2}{\sqrt{6}}$

16. $\frac{3\sqrt{2}}{\sqrt{5}}$

17. $\frac{4}{3 - \sqrt{7}}$

18. $\frac{5}{\sqrt{7} - \sqrt{2}}$