

Unit 8 Review
Secondary Math 3

Name Key

Simplify the following radicals.

$$1. \sqrt{49}$$

$$7$$

$$2. \sqrt{75x^5}$$

$$5x^2 \sqrt{3x}$$

$$3. \sqrt[3]{80x^9}$$

$$2x^3 \sqrt[3]{10}$$

$$4. \sqrt[5]{32x^5y^6}$$

$$2xy \sqrt[5]{4y}$$

Multiply the following radicals and SIMPLIFY.

$$5. \sqrt{6} \circ \sqrt{8} = \sqrt{48}$$

$$4\sqrt{3}$$

$$6. \sqrt{5x^2} \cdot \sqrt{6x^5y^4}$$

$$x^3y^2 \sqrt{30x}$$

$$7. \sqrt[3]{9x} \circ \sqrt[3]{3x}$$

$$3 \sqrt[3]{x^2}$$

Use the division property of radicals to simplify.

$$8. \frac{\sqrt{147}}{\sqrt{3}}$$

$$= 7$$

$$9. \frac{\sqrt{125x^2y^5}}{\sqrt{5xy}}$$

$$5xy^2 \sqrt{x}$$

$$10. \frac{\sqrt[3]{192x^6y^7}}{\sqrt[3]{3x^5y^9}}$$

$$4 \frac{\sqrt[3]{x}}{\sqrt[3]{4y^2}} \text{ or } 4 \sqrt[3]{\frac{x}{4y^2}}$$

$$11. \sqrt{\frac{25}{9}} = \frac{5}{3}$$

$$12. \sqrt{\frac{80x^5y}{64}}$$

$$\frac{x^2}{2} \sqrt{5xy}$$

$$13. \sqrt[4]{\frac{81y^6z}{27y}}$$

$$y \sqrt[4]{3yz}$$

Convert into radical form and SIMPLIFY.

$$14. 4^{\frac{3}{2}} = \sqrt{4^3}$$

$$= 8$$

$$15. 27^{\frac{4}{3}} = (\sqrt[3]{27})^4$$

$$= 81$$

$$16. 9^{\frac{3}{2}} = (\sqrt{9})^3$$

$$= 27$$

$$17. 32^{\frac{3}{5}} = (\sqrt[5]{32})^3$$

$$= 8$$

Convert into exponential form. You do not need to simplify.

$$18. (\sqrt[4]{x})^5$$

$$= x^{5/4}$$

$$19. (\sqrt{3})^5$$

$$= 3^{5/2}$$

$$20. \sqrt[5]{x}$$

$$= x^{1/5}$$

$$21. (\sqrt[3]{x})^4$$

$$= x^{4/3}$$

Solve for x.

$$22. \sqrt{x+4} - 3 = 7$$

$$x = 96$$

$$23. \sqrt{v+6} = 7$$

$$v = 43$$

$$24. \sqrt{x} = \sqrt{3x+1}$$

$$x = -\frac{1}{2} \text{ but } x \geq 0$$

no solution

$$25. \sqrt[3]{x+6} = 4$$

$$x = 58$$

$$\star 26. \sqrt{x+1} = x+3$$

$$x+1 = (x+3)^2$$

$$x+1 = x^2 + 6x + 9$$

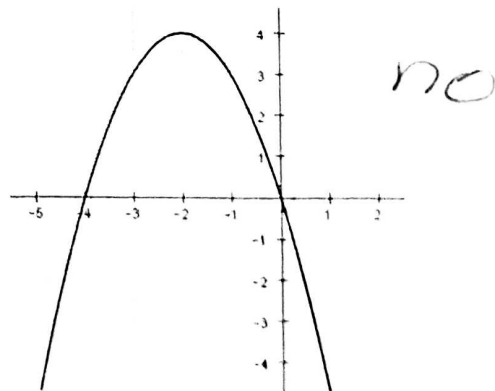
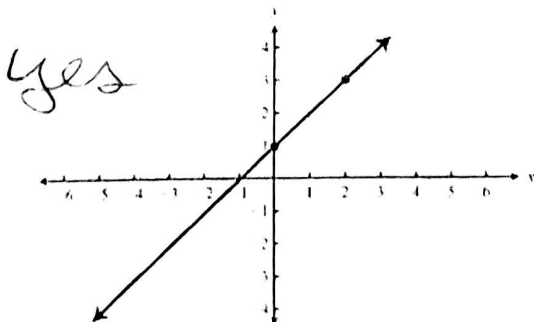
$$0 = x^2 + 5x + 8$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-5 \pm \sqrt{-7}}{2}$$

no real solution

Based on the graph, are the following functions one to one?



Find the inverse of the following function.

27. $f(x) = 3x - 5$

$$f^{-1}(x) = \frac{x+5}{3}$$

28. $f(x) = x^2 - 4$

$$f^{-1}(x) = \pm \sqrt{x+4}$$

29. $f(x) = \sqrt[3]{x+7}$

$$f^{-1}(x) = (x-7)^3$$

30. $f(x) = 4x^3 - 3$

$$f^{-1}(x) = \sqrt[3]{\frac{x+3}{4}}$$

31. $f(x) = (x+2)^2$

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

State the transformations graph and state the domain and range.

32. $f(x) = -\sqrt{x-4} + 2$

Transformations:

right 4

up 2

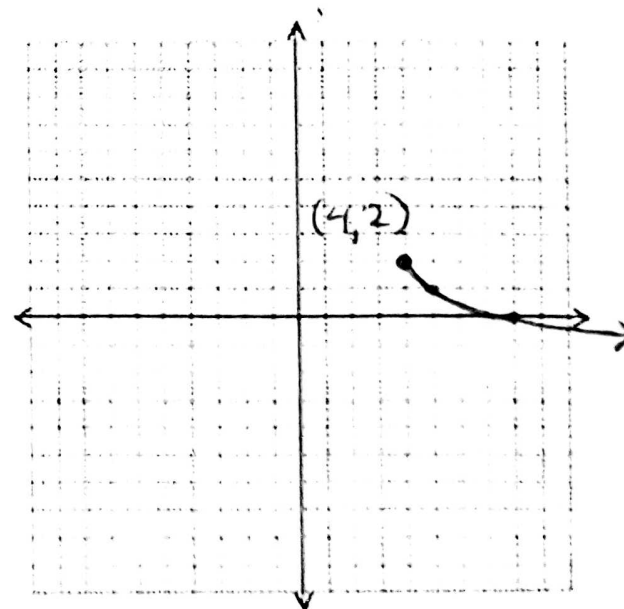
V-flip

Domain:

$$[4, \infty)$$

Range:

$$(-\infty, 2]$$



$$33. f(x) = 2\sqrt{x+1} - 3$$

Transformations:

left 1

down 3

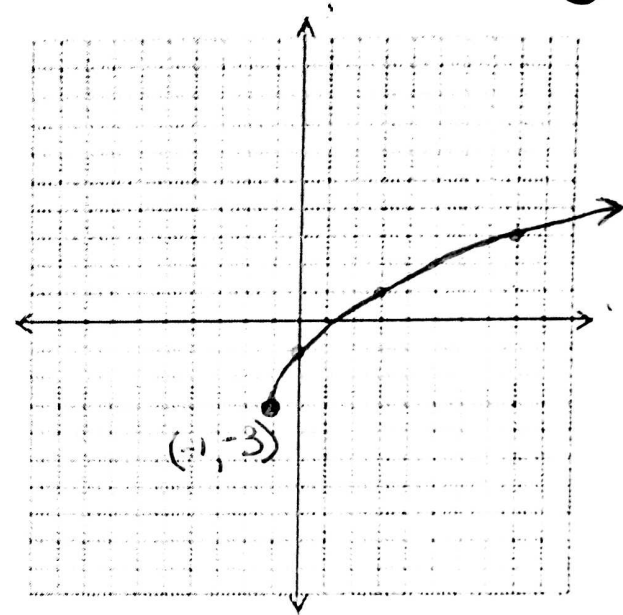
v-stretch by 2

Domain:

$$[-1, \infty)$$

Range:

$$[-3, \infty)$$



$$34. f(x) = \sqrt{x-4} - 2$$

Transformations:

right 4

down 2

Domain:

$$[4, \infty)$$

Range:

$$[-2, \infty)$$

