Alg 2 Chapter 7 Review Fall 2018

When simplifying don't leave answers with exponents that are zero or negative and give fractional answers in reduced form not as decimals.

1. Simplify. Use absolute value symbols as needed.

a) $\sqrt{68a^6b^{13}c^{23}}$ b) $\sqrt[3]{-24m^{14}n^{21}}$ c) $\sqrt[6]{g^{33}h^{49}}$

2. Simplify each. Assume that all variables are positive numbers. Make sure denominators are rationalized if necessary.

a) $5\sqrt{28}+3\sqrt{175}-2\sqrt{63}$ b) $\sqrt{10x^9y^7}\cdot\sqrt{15xy^{10}}$ c) $\dfrac{\sqrt[3]{96a^{15}b^4}}{\sqrt[3]{6a^2b^{10}}}$ d) $(7+3\sqrt{3})(5-4\sqrt{3})$

e) $(8-3\sqrt{7})(8+3\sqrt{7})$ f) $\dfrac{\sqrt{21m^{17}n^5}}{\sqrt{12m^6n^{13}}}$ g) $\sqrt[3]{4a^7b}\cdot\sqrt[3]{14a^9b^{11}}$ h) $(3\sqrt{5}-7)^2$

3. Rationalize each denominator and simplify. Assume all variables are positive numbers.

a) $\dfrac{12Q^4R^2}{\sqrt{3Q^5R^3}}$ b) $\dfrac{14a^2b}{\sqrt[3]{4a^{10}b^8}}$ c) $\dfrac{8}{4+\sqrt{6}}$ d) $\dfrac{14m^3}{\sqrt[6]{6m^2n^{13}}}$

4. Rewrite in radical form. a) $a^{\frac{2}{3}}$ b) $6m^{\frac{9}{2}}$

5. Rewrite in exponential form. a) $\sqrt[8]{e^5}$ b) $\sqrt[3]{5c}$

6. Simplify each. Assume that all variables are positive numbers.

a) $(5w^{\frac{-7}{2}})^4$ b) $(8m^9)^{\frac{-2}{3}}$

7. Solve each equation. Check for extraneous solutions.

a) $\sqrt[3]{2x-7}+4=9$ b) $5\sqrt{x-7}-4=6$ c) $3(x+1)^{\frac{3}{5}}=24$

d) $\sqrt{3x-2}-x=0$ e) $\sqrt{2x+19}-2=x$ f) $2(x-8)^{\frac{4}{3}}+1=163$

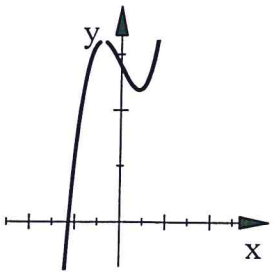
8. Write the equation of the inverse relation for each function. No need to simplify.

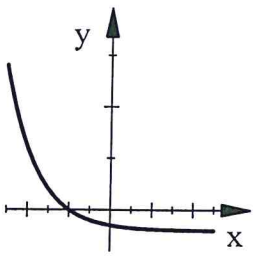
a) $f(x)=\dfrac{2x^2-3}{5}$ b) $y=-3x+1$ c) $y=-7\sqrt[5]{x-4}+6$ d) $y=9\left(\dfrac{5x-1}{8}\right)^3$

9. For parts a to d, tell if the inverse relation of each given equation or graph is a function or not.

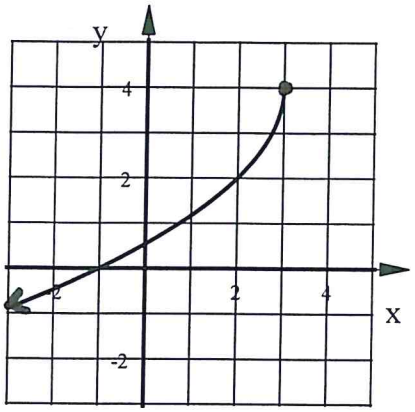
a) $y=-\dfrac{2}{3}x+7$ b) $y=(x-1)^4+5$

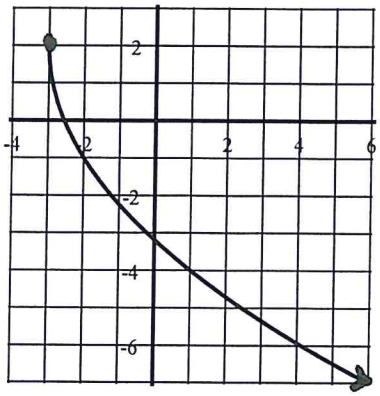
c) Use the graph below d) Use the graph below

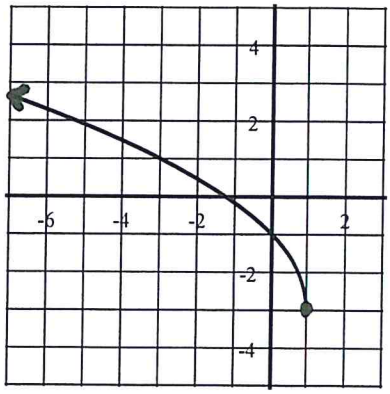




10. Write the equation of each square root function.

a) 

b) 

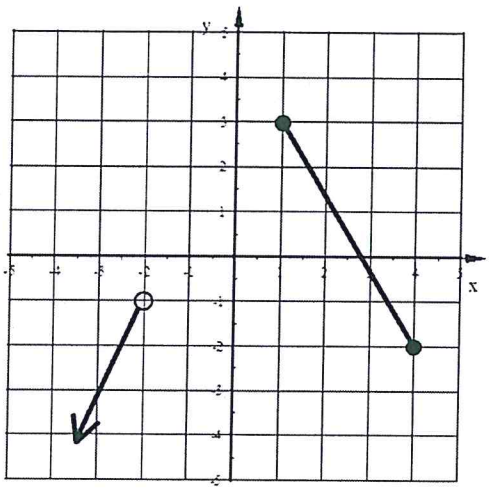
c) 

11. Graph each square root function using at least 3 points.

a) $y = -\sqrt{x} + 2$ b) $y = 2\sqrt{x+4} - 3$ c) $y = -\sqrt{-(x-3)} + 1$ d) $y = 3\sqrt{-(x-2)}$

12. Find the Domain and Range of the functions in problem #11. Give answer in interval or inequality notation.

13. State the Domain and Range of the inverse relation to the graph shown below in interval or inequality notation.



Alg 2 Chapter Review ANSWERS Fall 2018

1. a) $2|a^3| \cdot b^6 \cdot |c^{11}| \cdot \sqrt{17bc}$ b) $-2m^4n^7\sqrt[3]{3m^2}$ c) $|g^5| \cdot h^8\sqrt[6]{g^3h}$

2 a) $19\sqrt{7}$ b) $5x^5y^8\sqrt{6y}$ c) $\frac{2a^4\sqrt[3]{2a}}{b^2}$ d) $-1 - 13\sqrt{3}$ e) 1

f) $\frac{m^5\sqrt{7m}}{2n^4}$ g) $2a^5b^4\sqrt[3]{7a}$ h) $94 - 42\sqrt{5}$

3. a) $4Q\sqrt{3QR}$ b) $\frac{7\sqrt[3]{2a^2b}}{a^2b^2}$ c) $\frac{16 - 4\sqrt{6}}{5}$ d) $\frac{7m^2\sqrt[6]{6^5m^4n^5}}{3n^3}$

4. a) $\sqrt[3]{a^2}$ *or* $(\sqrt[3]{a})^2$ b) $6\sqrt{m^9}$ *or* $6(\sqrt{m})^9$

5. a) $e^{\frac{5}{8}}$ b) $(5c)^{\frac{1}{3}}$ 6. a) $\frac{625}{w^{14}}$ b) $\frac{1}{4m^6}$

7. a) $x = 66$ b) $x = 11$ c) $x = 31$ d) $x = 1,2$ e) $x = 3$ f) $x = -19,35$

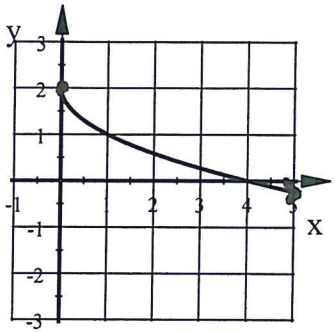
8. a) $f^{-1}(x) = \pm\sqrt{\frac{5x+3}{2}}$ b) $f^{-1}(x) = \frac{x-1}{-3}$

c) $f^{-1}(x) = \left(\frac{x-6}{-7}\right)^5 + 4$ d) $f^{-1}(x) = \frac{8 \cdot \sqrt[3]{\frac{x}{9}} + 1}{5}$

9. a)Yes b) No c) No d) Yes

10. a) $y = -2\sqrt{-(x-3)} + 4$ b) $y = -3\sqrt{x+3} + 2$ c) $y = 2\sqrt{-(x-1)} - 3$

11. a)



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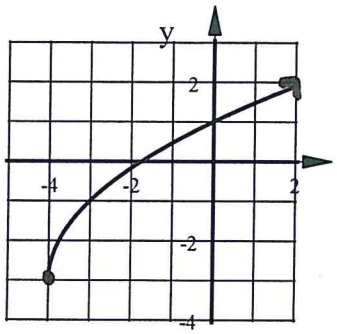

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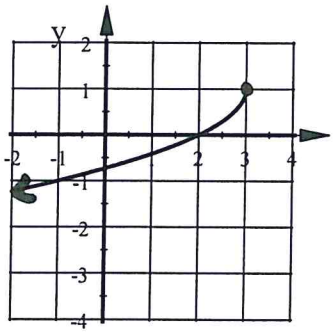

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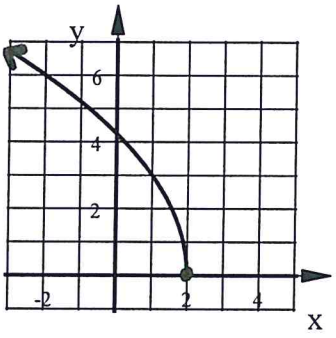

12. **Inequality Notation**

a) Domain: $x \geq 0$ Range: $y \leq 2$ b) Domain: $x \geq -4$ Range: $y \geq -3$

c) Domain: $x \leq 3$ Range: $y \leq 1$ d) Domain: $x \leq 2$ Range: $y \geq 0$

Interval Notation

a) Domain: $[0,\infty)$ Range: $(-\infty,2]$ b) Domain: $[-4,\infty)$ Range: $[-3,\infty)$

c) Domain: $(-\infty,3]$ Range: $(-\infty,1]$ d) Domain: $(-\infty,2]$ Range: $[0,\infty)$

13. Domain of the inverse: $x \leq 3$ OR $(-\infty,3]$

Range of the inverse: $y < -2, 1 \leq y \leq 4$ OR $(-\infty,-2) \cup [1,4]$