Algebra 2 Bellwork Monday, March 21, 2016

Solve each equation. Check for extraneous solutions.

1. $\sqrt{x+7} - 5 = x$

2. $3 \cdot \sqrt[3]{2x+4} + 11 = 29$

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

a) $\sqrt[3]{49c^{23}d^7} \cdot \sqrt[3]{14c^2d^4} =$ _____

b) $\dfrac{\sqrt{75Q^{14}R^7}}{\sqrt{35Q^5R^{14}}} =$ _____

c) $5\sqrt{54} - 4\sqrt{150} + \sqrt{96} =$ _____

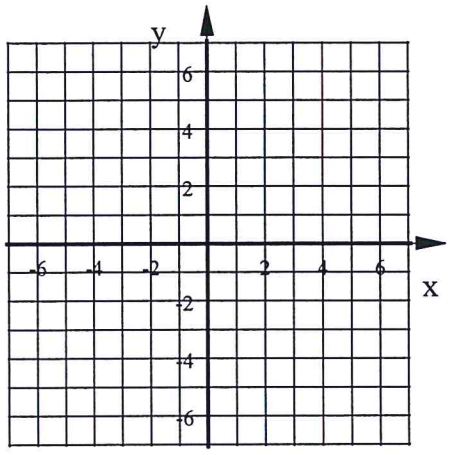
3. Rationalize each denominator. Simplify the answer if possible. Assume all variables are positive numbers.

a) $\dfrac{15g^2}{\sqrt[5]{8g^{23}h^7}}$

b) $\dfrac{20}{9+\sqrt{6}}$

4. Graph this square root function using at least three points.

$y = 5\sqrt{-(x-4)} - 6$



5. Simplify.

$(125z^{24})^{\frac{-4}{3}} =$ _____

6. State the Domain and Range of this function:

$y = -4\sqrt{x+12} - 19$

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Answers

Solve each equation. Check for extraneous solutions.

1. $\sqrt{x+7} - 5 = x$

$+5 \quad +5$

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

$x+7 = x^2 + 10x + 25$

$0 = x^2 + 9x + 18$

$0 = (x+6)(x-3)$

$x = -3, -6$

$x = -3$

2. $3 \cdot \sqrt[3]{2x+4} + 11 = 29$

$-11 \quad -11$

$\frac{3\sqrt[3]{2x+4}}{3} = \frac{18}{3}$

$(\sqrt[3]{2x+4})^3 = (6)^3$

$2x+4 = 216$

$-4 \quad -4$

$\frac{2x}{2} = \frac{212}{2}$

$x = 106$

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

a) $\sqrt[3]{49c^{23}d^7} \cdot \sqrt[3]{14c^2d^4} =$ $7c^8d^3\sqrt[3]{2cd^2}$

$7^2 \quad 2 \cdot 7$

$\sqrt[3]{2 \cdot 7^3 c^{25} d^{11}}$

b) $\frac{\sqrt{75Q^{14}R^7}}{\sqrt{35Q^5R^{14}}} =$ _____

$\frac{\sqrt{15Q^9}}{\sqrt{7R^7}} \cdot \frac{\sqrt{7R}}{\sqrt{7R}} = \frac{\sqrt{105Q^9R}}{\sqrt{7^2R^8}}$

$= \frac{Q^4\sqrt{105QR}}{7R^4}$

c) $5\sqrt{54} - 4\sqrt{150} + \sqrt{96} =$ $-\sqrt{6}$

$9 \cdot 6 \quad 25 \cdot 6 \quad 16 \cdot 6$

$15\sqrt{6} - 20\sqrt{6} + 4\sqrt{6}$

3. Rationalize each denominator. Simplify the answer if possible. Assume all variables are positive numbers.

a) $\frac{15g^2}{\sqrt[5]{8g^{23}h^7}} \cdot \frac{\sqrt[5]{2^2g^2h^3}}{\sqrt[5]{2^3g^2h^3}} = \frac{15g^2\sqrt[5]{2^2g^2h^3}}{\sqrt[5]{2^5g^{25}h^{10}}}$

2^3

$= \frac{15g^2\sqrt[5]{2^2g^2h^3}}{2g^5h^2} = \frac{15\sqrt[5]{2^2g^2h^3}}{2g^3h^2}$

b) $\frac{20}{9+\sqrt{6}} \cdot \frac{9-\sqrt{6}}{9-\sqrt{6}} = \frac{20(9-\sqrt{6})}{81-6}$

$= \frac{20(9-\sqrt{6})}{75}$

$= \frac{4(9-\sqrt{6})}{15}$

or $\frac{36-4\sqrt{6}}{15}$

4. Graph this square root function using at least three points.

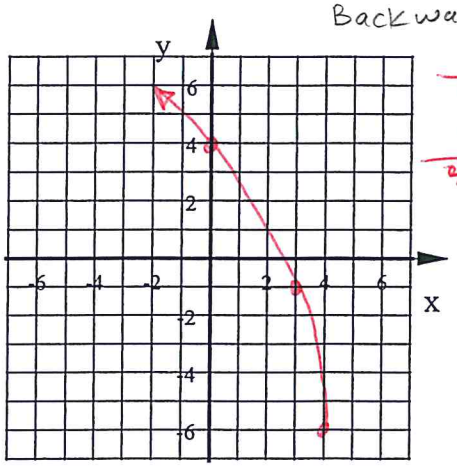
$y = 5\sqrt{-(x-4)} - 6$

4 RT

6 DOWN

5x taller

Backwards



$1 \to 5$

$2 \to 10$

5. Simplify.

$(125z^{24})^{\frac{-3}{4}} =$ _____

$\frac{3}{4}$

$125^{-4/3} \cdot z^{24 \cdot \frac{-4}{3}}$

$\frac{1}{625z^{32}}$

6. State the Domain and Range of this function:

$y = -4\sqrt{x+12} - 19$

12 left

19 down

upside down

$(-12, -19)$

Domain: $x \geq -12$

Range: $y \leq -19$