Algebra 2 Bellwork Thursday, March 17, 2016

1. Simplify. Use Absolute Value symbols where necessary. $\sqrt[4]{162a^7b^{24}c^{31}}$

2. Rationalize the denominator. Simplify your answer. Assume variables are positive.

a) $\dfrac{12g^4h}{\sqrt[4]{9g^6h^{17}}}$

b) $\dfrac{2\sqrt{3}-7}{\sqrt{6}+4\sqrt{3}}$

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

a) $\dfrac{\sqrt{15g^7h}}{\sqrt{12g^3h^{17}}}$

b) $\sqrt[3]{20cd^4} \cdot \sqrt[3]{28c^7d^9} \cdot \sqrt[3]{12c^2d^8}$

4. Solve each.

a) $\sqrt{46-9x}+6=x$

b) $2(3x-1)^{\frac{3}{5}}-9=119$

Alg 2 $\boxed{\text{Bellwork Answers}}$ 3-17-16

$2^4 = 16$
$3^4 = 81$ ✓
$4^4 = 256$ X

① $\sqrt[4]{\underset{81\cdot 2}{162}\, a^7 b^{24} c^{31}}$

$= \boxed{3|a|\, b^6 |c^7| \sqrt[4]{2a^3c^3}}$

② (a) $\dfrac{12g^4h}{\sqrt[4]{\underset{3^2}{9}\, g^6h^{17}}} \cdot \dfrac{\sqrt[4]{3^2g^2h^3}}{\sqrt[4]{3^2g^2h^3}} = \dfrac{12g^4h\sqrt[4]{3^2g^2h^3}}{\sqrt[4]{3^4g^8h^{20}}} = \dfrac{12g^4h\sqrt[4]{3^2g^2h^3}}{3g^2h^5}$

$= \boxed{\dfrac{4g^2\sqrt[4]{3^2g^2h^3}}{h^4}}$

(b) $\dfrac{2\sqrt{3}-7}{\underbrace{\sqrt{6}+4\sqrt{3}}} \cdot \dfrac{\sqrt{6}-4\sqrt{3}}{\underbrace{\sqrt{6}-4\sqrt{3}}} = \boxed{\dfrac{6\sqrt{2}-7\sqrt{6}-24+28\sqrt{3}}{-42}}$

$= a^2 - b^2 = (\sqrt{6})^2 - (4\sqrt{3})^2$
$= 6 - 16\cdot 3$
$= 6 - 48$
$= -42$

	$2\sqrt{3}$	-7
$\sqrt{6}$	$2\sqrt{18}$	$-7\sqrt{6}$
$-4\sqrt{3}$	$-8\cdot 3$	$+28\sqrt{3}$

$= 2\underset{9\cdot 2}{\sqrt{18}} - 7\sqrt{6} - 24 + 28\sqrt{3}$

$6\sqrt{2} - 7\sqrt{6} - 24 + 28\sqrt{3}$

3 a) $\dfrac{\sqrt{15g^7h}}{\sqrt{12g^3h^{17}}} = \dfrac{\sqrt{5g^4}}{\sqrt{4h^{16}}} = \boxed{\dfrac{g^2\sqrt{5}}{2h^8}}$

$2h^4$

b) $\sqrt[3]{20cd^4} \cdot \sqrt[3]{28c^7d^9} \cdot \sqrt[3]{12c^2d^8}$

$4 \cdot 5$ $\quad 4 \cdot 7$ $\quad 4 \cdot 3$

$= \sqrt[3]{4^3 \cdot 5 \cdot 7 \cdot 3\, c^{10} d^{21}} = 4c^3d^7 \sqrt[3]{5 \cdot 7 \cdot 3\, c}$

$= \boxed{4c^3d^7 \sqrt[3]{105c}}$

4 a) $\sqrt{46-9x} + 6 = x$

$\left(\sqrt{46-9x}\right)^2 = (x-6)^2$

$46 - 9x = x^2 - 12x + 36$

$0 = x^2 - 3x - 10$

$0 = (x-5)(x+2)$

$x = \cancel{5}, -\cancel{2}$

No Solution

both answers are extraneous solutions

b) $2(3x-1)^{3/5} - 9 = 119$

$+9 \quad +9$

$\dfrac{2(3x-1)^{3/5}}{2} = \dfrac{128}{2}$

$\left[(3x-1)^{3/5}\right]^{5/3} = (64)^{5/3}$

$\left(\sqrt[3]{64}\right)^5$

$= (4)^5$

$3x - 1 = 1024$

$\boxed{x = \dfrac{1025}{3} = 341.67}$