

December, 10, 2018

Bellwork Alg 2B Monday, September 25, 2017

ANSWERS

1. Simplify. Assume that all variables are positive. Make sure answer has no radicals in the denominator.

a) $\frac{\sqrt[3]{30a^{11}b^4}}{\sqrt[3]{54a^3b^{13}}} = \sqrt[3]{\frac{30a^{11}b^4}{54a^3b^{13}}} = \sqrt[3]{\frac{15a^8}{27b^9}} = \frac{\sqrt[3]{15a^8}}{\sqrt[3]{27b^9}} = \frac{a^2 \sqrt[3]{15a^2}}{3b^3}$

b) $\sqrt[3]{12x^4y^7} \cdot \sqrt[3]{14x^7y} \cdot \sqrt[3]{15x^9} = \sqrt[3]{2^3 \cdot 3 \cdot 15 x^{10} y^8} = 2x^6y^2 \sqrt[3]{315x^2y^2}$

2. Rationalize the denominators. Simplify if possible.

a) $\frac{24}{5\sqrt{3}-6} \cdot \frac{5\sqrt{3}+6}{5\sqrt{3}+6} = \frac{8 \cdot 24(5\sqrt{3}+6)}{39 \cdot 13} = \frac{8(5\sqrt{3}+6)}{13} \text{ or } \frac{40\sqrt{3}+48}{13}$

$(5\sqrt{3})^2 - (6)^2$
 $25 \cdot 3 - 36$
 $75 - 36$
 39

b) $\frac{27c^8d}{\sqrt[4]{36c^{13}d^3e^{46}}} \cdot \frac{\sqrt[4]{6^2c^3de^2}}{\sqrt[4]{6^2c^3de^2}} = \frac{27c^8d \sqrt[4]{6^2c^3de^2}}{\sqrt[4]{6^4c^{16}d^4e^{48}}} = \frac{27c^8d \sqrt[4]{6^2c^3de^2}}{6c^4de^{12}} = \frac{9c^4 \sqrt[4]{6^2c^3de^2}}{2e^{12}}$

3. Simplify each. No decimals. Make sure answer has no exponents that are zero or negative.

$$\begin{aligned}
 \text{a) } \left(\frac{18^{-1} a^5 b^{-2}}{2ab^{\frac{1}{6}}} \right)^{\frac{3}{2}} &= \left(\frac{a^{5-1}}{18 \cdot 2 \cdot b^{-\frac{1}{6} - 2}} \right)^{-3/2} = \left(\frac{a^4}{36 b^{\frac{11}{6}}} \right)^{-3/2} \\
 &= \left(\frac{36 b^{\frac{11}{6}}}{a^4} \right)^{3/2} \\
 &= \frac{36^{3/2} b^{\frac{11}{6} \cdot \frac{3}{2}}}{a^{4 \cdot \frac{3}{2}}} \\
 &= \frac{(\sqrt{36})^3 b^{\frac{11}{4}}}{a^6} \\
 &= \frac{216 b^{\frac{11}{4}}}{a^6}
 \end{aligned}$$

$$\begin{array}{cc}
 5\sqrt{7} & -6\sqrt{2} \\
 3\sqrt{7} & \begin{array}{|c|c|} \hline 15 \cdot 7 & -18 \cdot 14 \\ \hline = 105 & \\ \hline \end{array} \\
 +2\sqrt{2} & \begin{array}{|c|c|} \hline +10\sqrt{14} & -12 \cdot 2 \\ \hline & = -24 \\ \hline \end{array}
 \end{array} = 81 - 8\sqrt{14}$$

$$\text{c) } \underset{64 \cdot 2}{3\sqrt{128}} - \underset{49 \cdot 3}{2\sqrt{147}} + \underset{81 \cdot 2}{4\sqrt{162}} - \underset{16 \cdot 2}{5\sqrt{32}}$$

$$= 3 \cdot 8\sqrt{2} - 2 \cdot 7\sqrt{3} + 4 \cdot 9\sqrt{2} - 5 \cdot 4\sqrt{2}$$

$$= 24\sqrt{2} - 14\sqrt{3} + 36\sqrt{2} - 20\sqrt{2}$$

$$= 40\sqrt{2} - 14\sqrt{3}$$

4. Rewrite in radical form.

$$\text{a) } (13m^3)^{\frac{9}{5}} = \sqrt[5]{(13m^3)^9} \text{ or } \left(\sqrt[5]{13m^3} \right)^9 \quad \text{b) } 5w^{\frac{1}{6}} = 5\sqrt[6]{w}$$

5. Rewrite in exponential form.

$$\text{a) } \sqrt[4]{c^3} = c^{\frac{3}{4}}$$

$$\text{b) } 6\sqrt{m^{11}} = 6m^{\frac{11}{2}}$$

$$\text{c) } \sqrt[3]{3g^4} = (3g^4)^{\frac{1}{3}}$$

6. Simplify. Use absolute value symbols where necessary.

$$\sqrt[4]{1458g^{17}h^{45}k^{320}}$$

$$\begin{aligned}
 2^6 &= 64 \\
 3^6 &= 729 \\
 4^6 &= 4096
 \end{aligned}$$

$$3g^2 |h^7| |k^{53}| \sqrt[6]{2g^5 h^3 k^2}$$