Bellwork Alg 2B Friday, September 13, 2017

1. Rationalize the denominator.
Simplify your answer.

$$\frac{12}{7+\sqrt{5}}$$

2. Solve each.

a) $\sqrt{x+1}+5=x$

b) $5(2x-1)^{\frac{3}{2}}+9=144$

3. Simplify. Make sure you leave answers with whole number exponents and no decimal coefficients.

$$\left(\frac{9P^{-10}Q^{8}}{9^{-1}P^{-2}Q^{-7}}\right)^{-\frac{3}{4}}$$

4. Simplify. $(6-2\sqrt{3})(5+8\sqrt{3})$

Bellwork Alg 2B Friday, September 13, 2017 ANSWERS

1. Rationalize the denominator.
Simplify your answer.

$$\frac{12}{7+\sqrt{5}} \cdot \frac{7-\sqrt{5}}{7-\sqrt{5}} = \frac{12(7-\sqrt{5})}{49-5} = \frac{12(7-\sqrt{5})}{44} = \frac{3(7-\sqrt{5})}{11} \text{ or } \frac{21-3\sqrt{5}}{11}$$

2. Solve each.

a) $\sqrt{x+1}+5=x$

$-5 \quad -5$

$(\sqrt{x+1})^2 = (x-5)^2$

$x+1 = x^2-10x+25$

$-x \quad -1 \qquad -x \quad -1$

$0 = x^2-11x+24$

$0 = (x-8)(x-3)$

$x = \cancel{3}, 8$ $\quad x=8$

24, $-8 \cdot -3$, -11

b) $5(2x-1)^{\frac{3}{2}}+9=144$

$-9 \quad -9$

$\frac{5(2x-1)^{3/2}}{5} = \frac{135}{5}$

$\left[(2x-1)^{3/2}\right]^{2/3} = (27)^{2/3}$

$2x-1=9$

$+1 \quad +1$

$\frac{2x}{2} = \frac{10}{2}$

$x=5$

3. Simplify. Make sure you leave answers with whole number exponents and no decimal coefficients.

$$\left(\frac{9P^{-10}Q^{8}}{9^{-1}P^{-2}Q^{-7}}\right)^{-\frac{3}{4}} = \left(\frac{9 \cdot 9\, Q^{15}}{P^{8}}\right)^{-3/4} = \left(\frac{P^{8}}{81\, Q^{15}}\right)^{3/4}$$

$$\frac{P^{8 \cdot 3/4}}{81^{3/4}\, Q^{15 \cdot 3/4}} = \frac{P^{6}}{27\, Q^{45/4}}$$

$(\sqrt[4]{81})^3 = (3)^3 = 27$

4. Simplify. $(6-2\sqrt{3})(5+8\sqrt{3})$

	6	$-2\sqrt{3}$
5	30	$-10\sqrt{3}$
$+8\sqrt{3}$	$+48\sqrt{3}$	$-16 \cdot 3 = -48$

$-18+38\sqrt{3}$