BECA / Huson / Precalculus: Exponents   First and last name:
5 December 2024   Section:

3.15 PreQuiz: Rational exponents and complex numbers   A2.A.APR.6

1. Simplify each expression.   (HSN.RN.2 Rational exponents)

   (a) $27^{\frac{2}{3}} =$

   (b) $\left(\sqrt{\frac{1}{4}}\right)^{-3} =$

2. Simplify each radical expression.

   (a) $\sqrt{81} =$

   (b) $\sqrt{18} =$

   (c) $\sqrt{-50} =$

   (d) $\dfrac{\sqrt{-8}}{\sqrt{2}} =$

3. Rewrite each expression to a fractional exponent in simplest terms.

   (a) $\sqrt[2]{7} =$

   (b) $\dfrac{1}{\sqrt[2]{7}} =$

   (c) $\sqrt[3]{x^2} =$

   (d) $\dfrac{1}{(\sqrt[2]{x})^4} =$

4. Rewrite each expression with fractional exponent as a radical.

   (a) $7^{\frac{1}{3}} =$

   (b) $7^{-\frac{1}{2}} =$

   (c) $x^{\frac{3}{2}} =$

   (d) $x^{-\frac{5}{3}} =$

5. Write each expression in the form $a + bi$ with a, b real numbers.

Given $s = -4 - i$ and $t = 5 + 3i$.

(a) $s + t =$

(b) $s - t =$

(c) $st =$

6. Square both sides of the equation and solve for x.

(a) $\sqrt{x + 9} = 4$ (b) Check your solution.

7. Solve for x and check.

(a) $\sqrt{2x + 1} - 7 = -2$ (b) Check your solution.

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8. The expression $2 - \dfrac{x-1}{x+2}$ is equivalent to

    (a) $1 - \dfrac{3}{x+2}$

    (b) $1 + \dfrac{3}{x+2}$

    (c) $1 - \dfrac{1}{x+2}$

    (d) $1 + \dfrac{1}{x+2}$

9. Find all of the values of x that make the equation true.

$$\frac{3}{x-4} = \frac{x-5}{x}$$

10. Select all of the solutions to $(x-4)^2 = 7$.

(HSN.CN.2 Complex numbers)

    (a) $x = 4 + 7i$

    (b) $x = 4 - 7i$

    (c) $x = 4 - \sqrt{7}$

    (d) $x = 4 - 7 = -3$

    (e) $x = 4 + 7 = 11$

    (f) $x = 4 + \sqrt{7}$