

SM3 6.2: Solving Rational Exponent Equations

Solve each equation for x over the set of real numbers.

1) $\sqrt[3]{x} - 8 = -3$

$$x = 125$$

2) $\sqrt[3]{x - 12} = 3$

$$x = 39$$

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

$$x = 14$$

4) $\sqrt[3]{12x} + 10 = 7$

$$x = -\frac{9}{4}$$

5) $\sqrt[5]{x - 3} = 2$

$$x = 35$$

6) $\sqrt[3]{7 - x} + 2 = 7$

$$x = -118$$

7) $2\sqrt[4]{x} = -12$

$$x = \emptyset$$

8) $5\sqrt[3]{x + 6} - 1 = 24$

$$x = 119$$

9) $16\sqrt[6]{x - 3} = 32$

$$x = 67$$

10) $2x^{2/3} = 32$

$$x = \pm 64$$

11) $x^{2/5} - 1 = 8$

$$x = \pm 243$$

12) $x^{3/2} = -125$

$$x = \emptyset$$

13) $(3x)^{4/3} + 2 = 83$

$$x = \pm 9$$

14) $\frac{1}{12}(x - 5)^{1/2} = 3$

$$x = 1301$$

15) $\frac{1}{4}(x - 2)^{3/2} = 16$

$$x = 18$$

16) $(x + 1)^{3/7} = 27$

$$x = 2186$$

17) $(5x - 26)^{5/6} = 32$

$$x = 18$$

18) $\frac{1}{2}(2x + 4)^{10/3} = 512$

$$x = \{-6, 2\}$$