Intermediate Algebra Skill
Solving Quadratic Form Equations: Rational Exponents

Solve the following equations:

1) \( \frac{2}{3} + t^{\frac{1}{3}} - 6 = 0 \)

2) \( w^{\frac{2}{3}} - 2w^{\frac{1}{3}} - 8 = 0 \)

3) \( y^{\frac{1}{3}} - y^{\frac{1}{6}} - 6 = 0 \)

4) \( t^{\frac{1}{2}} + 3t^{\frac{1}{4}} + 2 = 0 \)

5) \( t^{\frac{1}{3}} + 2t^{\frac{1}{6}} = 3 \)

6) \( m^{\frac{1}{2}} + 6 = 5m^{\frac{1}{4}} \)

7) \( x^{\frac{2}{3}} - 3x^{\frac{1}{3}} + 2 = 0 \)

8) \( x^{\frac{2}{3}} + 4x^{\frac{1}{3}} - 12 = 0 \)

9) \( 6x^{\frac{2}{3}} + 5x^{\frac{1}{3}} + 1 = 0 \)

10) \( 20x^{\frac{2}{3}} + 7x^{\frac{1}{3}} - 6 = 0 \)

11) \( x^{\frac{1}{2}} - 4x^{\frac{1}{4}} + 3 = 0 \)

12) \( x^{\frac{1}{2}} - 6x^{\frac{1}{4}} + 8 = 0 \)

13) \( 4x^{\frac{1}{2}} - 8x^{\frac{1}{4}} + 3 = 0 \)

14) \( 6x^{\frac{1}{2}} - x^{\frac{1}{4}} - 2 = 0 \)

15) \( 2y^{\frac{2}{5}} - y^{\frac{1}{5}} - 1 = 0 \)

16) \( 6y^{\frac{2}{5}} + y^{\frac{1}{5}} - 1 = 0 \)

17) \( x^{-\frac{2}{3}} + x^{-\frac{1}{3}} - 6 = 0 \)

18) \( 36y^{-\frac{4}{3}} - 13y^{-\frac{2}{3}} + 1 = 0 \)
Answers to Solving Quadratic Form Equations: Rational Exponents

1) \(-27,8\)
2) \(-8,64\)
3) \(729\)
4) \(\emptyset\)
5) \(1\)
6) \(16,81\)
7) \(1,8\)
8) \(-216,8\)
9) \(-\frac{1}{27}, -\frac{1}{8}\)
10) \(\frac{8}{125}, -\frac{27}{64}\)
11) \(1,81\)
12) \(16,256\)
13) \(\frac{1}{16'16}\)
14) \(\frac{16}{81}\)
15) \(-\frac{1}{32}, 1\)
16) \(\frac{1}{243}, -\frac{1}{32}\)
17) \(-\frac{1}{27'}, \frac{1}{8}\)
18) \(\pm 8, \pm 27\)