

**SHOW ALL WORK.**

Complete Parts A & B OR Parts B & C

**PART A:**

**Rewrite the expression using rational exponents.**

1.  $\sqrt[3]{2}$

2.  $(\sqrt{2})^3$

3.  $\sqrt{2}$

4.  $(\sqrt[3]{2})^2$

5.  $\sqrt[3]{12}$

6.  $\sqrt[5]{8}$

7.  $(\sqrt[3]{10})^7$

8.  $(\sqrt[8]{15})^3$

**Rewrite the expression using radical notation.**

9.  $5^{\frac{1}{4}}$

10.  $7^{\frac{1}{3}}$

11.  $14^{\frac{2}{5}}$

12.  $21^{\frac{9}{4}}$

**Evaluate the expression without a calculator.**

13.  $\sqrt[6]{64}$

14.  $8^{\frac{1}{3}}$

15.  $16^{\frac{3}{2}}$

16.  $\sqrt[3]{-125}$

**Evaluate the expression using a calculator. Round answers to the nearest hundredth.**

17.  $\sqrt[5]{32,768}$

18.  $\sqrt[7]{1695}$

19.  $\sqrt[9]{-230}$

20.  $85^{\frac{1}{6}}$

21.  $25^{\frac{1}{3}}$

22.  $20,736^{\frac{1}{4}}$

23.  $(\sqrt[4]{187})^3$

24.  $(\sqrt{6})^{-5}$

**PART B:**

**Evaluate the expression without a calculator.**

25.  $27^{\frac{2}{3}}$

26.  $(-243)^{\frac{1}{5}}$

27.  $(\sqrt[3]{8})^{-2}$

28.  $(\sqrt[3]{-64})^4$

29.  $(\sqrt[4]{16})^{-5}$

30.  $25^{\frac{3}{2}}$

31.  $64^{-\frac{2}{3}}$

32.  $\frac{1}{81^{-\frac{3}{4}}}$

**Rewrite in simplest form.**

33.  $\sqrt[3]{\frac{x^{15}}{y^6}}$

34.  $(\sqrt[3]{x^2} \cdot \sqrt[6]{x^4})^{-3}$

35.  $\frac{\sqrt[3]{x} \cdot \sqrt{x^5}}{\sqrt{25x^{16}}}$

36.  $x^{\frac{1}{4}} \cdot x^{\frac{1}{3}}$

37.  $(y^4)^{\frac{1}{6}}$

38.  $\frac{2}{x^{-\frac{3}{2}}}$

39.  $\frac{x^{\frac{2}{5}}y}{xy^{-\frac{1}{3}}}$

40.  $7^{4/5} \cdot 7^{1/5}$

41.  $3^{4/5} \cdot 3^{1/3}$

42.  $2^{1/5} \cdot 7^{1/5}$

43.  $\frac{10^2}{10^{3/5}}$

44.  $\frac{5}{5^{5/6}}$

45.  $\frac{3^2}{\sqrt{3}}$

46.  $(6^{5/3})^{3/2}$

47.  $\left(\frac{x^{2/3}}{4y^{-6}}\right)^{1/2}$

48.  $(27a^6)^{1/3} \cdot (ab^{3/4})^{-4}$

**PART C:**

**Rewrite in simplest form.**

49.  $\frac{x^{5\sqrt{3}}}{x^{2\sqrt{3}}}$

50.  $(x^{\sqrt{2}})^{\sqrt{3}}$

51.  $\left(\frac{x^\pi}{x^{\frac{\pi}{3}}}\right)^2$

52.  $x^2y^{\sqrt{2}} + 3x^2y^{\sqrt{2}}$

### Homework 4.3

1.  $2^{\frac{1}{3}}$
2.  $2^{\frac{3}{2}}$
3.  $2^{\frac{1}{2}}$
4.  $2^{\frac{2}{3}}$
5.  $12^{\frac{1}{3}}$
6.  $8^{\frac{1}{5}}$
7.  $10^{\frac{7}{3}}$
8.  $15^{\frac{3}{8}}$
9.  $\sqrt[4]{5}$
10.  $\sqrt[3]{7}$
11.  $(\sqrt[5]{14})^2$
12.  $(\sqrt[4]{21})^9$
13. 2
14. 2
15. 64
16. -5
17. 8
18. 2.89
19. -1.83
20. 2.10
21. 0.34
22. 12
23. 50.57
24. 0.01
25. 9
26. -3
27.  $\frac{1}{4}$
28. 256
29.  $\frac{1}{32}$
30. 125
31.  $\frac{1}{16}$
32. 27
33.  $\frac{x^5}{y^2}$
34.  $\frac{1}{x^4}$
35.  $\frac{\sqrt[6]{5}}{5x^6}$
36.  $x^{\frac{7}{12}}$
37.  $y^{\frac{2}{3}}$
38.  $2x^{\frac{3}{2}}$
39.  $\frac{y^{\frac{4}{3}}}{x^{\frac{5}{3}}}$
40. 7
41.  $3^{\frac{17}{15}}$
42.  $14^{\frac{1}{5}}$
43.  $10^{\frac{7}{5}}$
44.  $5^{\frac{1}{6}}$
45.  $3^{\frac{3}{2}}$
46.  $6^{\frac{5}{2}}$
47.  $\frac{x^{\frac{1}{3}}y^3}{4}$
48.  $\frac{3}{a^2b^3}$
49.  $x^{3\sqrt{3}}$
50.  $x^{\sqrt{6}}$
51.  $x^{\frac{4\pi}{3}}$
52.  $4x^2y^{\sqrt{2}}$