

Chapter 6 Test

Solve each equation.

1) $x^{\frac{1}{2}} = 8$

2) $(8x)^{\frac{1}{6}} - 1 = 1$

Simplify.

3) $\frac{4\sqrt[3]{-2}}{5\sqrt[3]{-250}}$

4) $\frac{2}{3 + \sqrt{3}}$

5) $\frac{5}{2 + 6\sqrt{3}}$

6) $\frac{7 + 2\sqrt{5}}{\sqrt{5} + 6\sqrt{7}}$

Solve each equation. Remember to check for extraneous solutions.

7) $2 + \sqrt{9 - b} = \sqrt{4b - 4}$

8) $-9\sqrt{9 - 2x} = -45$

Identify the domain and range of each.

9) $y = \sqrt{x}$

A) Domain: { All real numbers. }
Range: { All real numbers. }B) Domain: $x \leq 1$
Range: $y \geq 0$ C) Domain: $x \geq 0$
Range: $y \leq 0$ D) Domain: $x \geq 0$
Range: $y \geq 0$

10) $y = 3\sqrt{x + 5} - 5$

A) Domain: $x \geq -5$
Range: $y \geq -5$ B) Domain: $x \geq 5$
Range: $y \geq 5$ C) Domain: { All real numbers. }
Range: { All real numbers. }D) Domain: $x \geq -5$
Range: $y \leq -5$

Write each expression in radical form.

11) $k^{\frac{5}{6}}$

A) $(\sqrt{6k})^5$

B) $(\sqrt[6]{k})^5$

C) $(\sqrt{k})^3$

D) $(\sqrt[3]{10k})^4$

12) $4^{\frac{1}{3}}$

A) $\frac{1}{(\sqrt[4]{3})^3}$

B) $\frac{1}{(\sqrt[3]{4})^4}$

C) $\sqrt[3]{4}$

D) $(\sqrt{10})^3$

Write each expression in exponential form.

13) $(\sqrt{7x})^3$

- A) $(4x)^{\frac{2}{3}}$ B) $(6x)^{\frac{5}{3}}$
C) $(7x)^{\frac{3}{2}}$ D) $(2x)^{\frac{1}{2}}$

14) $\frac{1}{(\sqrt[3]{6})^5}$

- A) $6^{-\frac{5}{3}}$ B) $6^{\frac{3}{2}}$
C) $10^{\frac{5}{4}}$ D) $4^{\frac{1}{3}}$

Simplify. Your answer should contain only positive exponents with no fractional exponents in the denominator.

15) $k^{\frac{2}{3}} \cdot \left(k^{\frac{7}{4}}\right)^{-\frac{1}{2}}$

- A) $\frac{k^{\frac{19}{24}}}{k}$ B) k
C) $k^{\frac{17}{6}}$ D) $k^{\frac{13}{2}}$

16) $\left(u^2v^2 \cdot vu^{\frac{3}{2}}\right)^{\frac{2}{3}}$

- A) v^5 B) $v^2u^{\frac{1}{4}}$
C) $v^2u^{\frac{7}{3}}$ D) $\frac{v^{\frac{1}{2}}u^{\frac{1}{4}}}{u^5}$

Answers to Chapter 6 Test (ID: 9)

1) {64}

2) {8}

3) $\frac{4}{25}$

4) $\frac{3 - \sqrt{3}}{3}$

5) $\frac{-5 + 15\sqrt{3}}{52}$

6) $\frac{-7\sqrt{5} + 42\sqrt{7} - 10 + 12\sqrt{35}}{247}$

7) {5}

8) {-8}

9) D

10) A

11) B

12) C

13) C

14) A

15) A

16) C

Chapter 6 Test

Solve each equation.

1) $n^{-\frac{1}{2}} = \frac{1}{8}$

2) $8 = (r + 3)^{\frac{3}{4}}$

Simplify.

3) $\frac{\sqrt[3]{2}}{3\sqrt[3]{128}}$

4) $\frac{\sqrt{5}}{3 + 3\sqrt{5}}$

5) $\frac{8}{9 + \sqrt{7}}$

6) $\frac{5 + \sqrt{5}}{-10 - \sqrt{3}}$

Solve each equation. Remember to check for extraneous solutions.

7) $3 = \sqrt{1 - 6k} - \sqrt{-4 - 2k}$

8) $10 + \sqrt{49r} = 17$

Identify the domain and range of each.

9) $y = \frac{1}{2}\sqrt{x - 3}$

A) Domain: $x \geq 3$

Range: $y \leq 0$

B) Domain: $x \geq 3$

Range: $y \geq 0$

C) Domain: $x \leq 0$

Range: $y \geq -\frac{1}{2}$

D) Domain: $x \geq -3$

Range: $y \geq 0$

10) $y = -3 + 5\sqrt{x - 3}$

A) Domain: $x \geq 3$

Range: $y \geq 3$

B) Domain: $x \geq -3$

Range: $y \geq 3$

C) Domain: $x \geq 3$

Range: $y \geq -3$

D) Domain: $x \geq -3$

Range: $y \geq -3$

Write each expression in radical form.

11) $n^{\frac{3}{2}}$

A) $(\sqrt{n})^3$

B) $(\sqrt[4]{n})^3$

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

D) $(\sqrt[6]{2n})^7$

12) $7^{\frac{1}{2}}$

A) $\sqrt{7}$

B) $\frac{1}{\sqrt{7}}$

C) $\frac{1}{\sqrt{10}}$

D) $\sqrt[3]{7}$

Write each expression in exponential form.

13) $(\sqrt[3]{6b})^5$

- A) $(5b)^{\frac{3}{4}}$ B) $(10b)^{\frac{1}{4}}$
C) $b^{\frac{3}{2}}$ D) $(6b)^{\frac{5}{3}}$

14) $\frac{1}{\sqrt[4]{5}}$

- A) $3^{\frac{1}{5}}$ B) $3^{\frac{4}{3}}$
C) $5^{-\frac{1}{4}}$ D) $2^{-\frac{6}{5}}$

Simplify. Your answer should contain only positive exponents with no fractional exponents in the denominator.

15) $\left(xx^{\frac{3}{2}}\right)^{\frac{1}{2}}$

- A) $x^{\frac{5}{4}}$ B) $x^{\frac{7}{16}}$
C) x^5 D) $\frac{x^6}{x}$

16) $(y^2x^2)^2$

- A) $x^{\frac{1}{3}}y^{\frac{9}{2}}$ B) $\frac{x^{\frac{1}{6}}y^{\frac{41}{24}}}{x^2}$
C) $\frac{x^{\frac{7}{9}}y^{\frac{2}{3}}}{x}$ D) y^4x^4

Answers to Chapter 6 Test (ID: 10)

1) {64}

2) {13}

3) $\frac{1}{12}$

4) $\frac{-\sqrt{5}+5}{12}$

5) $\frac{36-4\sqrt{7}}{37}$

6) $\frac{-50+5\sqrt{3}-10\sqrt{5}+\sqrt{15}}{97}$

7) $\left\{-4, -\frac{5}{2}\right\}$

8) {1}

9) B

10) C

11) A

12) A

13) D

14) C

15) A

16) D

Chapter 6 Test

Solve each equation.

1) $9 = n^{\frac{1}{2}}$

2) $125 = (p + 6)^{\frac{3}{2}}$

Simplify.

3) $\frac{\sqrt[6]{6}}{\sqrt[6]{15625}}$

4) $-\frac{\sqrt{3}}{-3 - \sqrt{5}}$

5) $\frac{2}{\sqrt{10 + 5}}$

6) $\frac{9 - \sqrt{6}}{3 + \sqrt{3}}$

Solve each equation. Remember to check for extraneous solutions.

7) $\sqrt{2x + 3} - \sqrt{8x + 1} = -2$

8) $\sqrt{7x - 6} = 8$

Identify the domain and range of each.

9) $y = \frac{3}{4}\sqrt{x}$

A) Domain: $x \geq 0$

Range: $y \leq 0$

B) Domain: $x \geq 0$

Range: $y \geq 0$

C) Domain: $x \leq \frac{3}{4}$

Range: $y \geq 0$

D) Domain: $x \leq 0$

Range: $y \geq -\frac{3}{4}$

10) $y = 3\sqrt{x + 3} - 4$

A) Domain: $x \geq -3$

Range: $y \leq -4$

B) Domain: $x \geq -3$

Range: $y \geq -4$

C) Domain: $x \geq 3$

Range: $y \geq -4$

D) Domain: $x \geq 4$

Range: $y \geq 3$

Write each expression in radical form.

11) $(6x)^{\frac{3}{2}}$

A) $(\sqrt{6x})^3$

B) $(\sqrt[6]{10x})^5$

C) $(\sqrt[3]{10x})^5$

D) $(\sqrt[4]{10x})^5$

12) $3^{\frac{3}{2}}$

A) $\frac{1}{\sqrt{3}}$

B) $(\sqrt{6})^5$

C) $\frac{1}{(\sqrt[3]{10})^4}$

D) $(\sqrt{3})^3$

Write each expression in exponential form.

13) $(\sqrt[3]{10p})^2$

A) $(10p)^{\frac{4}{3}}$

B) $(6p)^{\frac{4}{3}}$

C) $(2p)^{\frac{5}{4}}$

D) $(10p)^{\frac{2}{3}}$

14) $(\sqrt{3})^3$

A) $6^{\frac{2}{3}}$

B) $3^{\frac{3}{2}}$

C) $6^{\frac{5}{2}}$

D) $7^{\frac{5}{2}}$

Simplify. Your answer should contain only positive exponents with no fractional exponents in the denominator.

15) $(x^{-1} \cdot x^{-2}x^2)^{\frac{7}{4}}$

A) $\frac{x^{\frac{11}{12}}}{x}$

B) $x^{\frac{5}{2}}$

C) $\frac{x^{\frac{1}{4}}}{x^2}$

D) $\frac{x^{\frac{1}{2}}}{x^2}$

16) $y^{-\frac{1}{3}} \cdot \left(\frac{3}{x^2}\right)^{\frac{3}{2}}$

A) $\frac{y^{\frac{17}{6}}}{x^3}$

B) $\frac{y^{\frac{2}{3}}x^{\frac{9}{4}}}{y}$

C) $y \cdot x^3 \cdot (y^3)^2$

D) $x^{\frac{2}{3}}y^{\frac{1}{2}}$

Answers to Chapter 6 Test (ID: 11)

1) {81}

2) {19}

3) $\frac{\sqrt[6]{6}}{5}$

4) $\frac{3\sqrt{3} - \sqrt{15}}{4}$

5) $\frac{-2\sqrt{10} + 10}{15}$

6) $\frac{9 - 3\sqrt{3} - \sqrt{6} + \sqrt{2}}{2}$

7) {3}

8) {10}

9) B

10) B

11) A

12) D

13) D

14) B

15) C

16) B

Chapter 6 Test

Solve each equation.

1) $m^{\frac{1}{5}} = 2$

2) $(m-2)^{\frac{3}{2}} + 7 = 519$

Simplify.

3) $\frac{2\sqrt[4]{2}}{3\sqrt[4]{162}}$

4) $\frac{2}{4-3\sqrt{5}}$

5) $\frac{8}{-5-8\sqrt{2}}$

6) $\frac{\sqrt{5}-5\sqrt{6}}{3+2\sqrt{2}}$

Solve each equation. Remember to check for extraneous solutions.

7) $\sqrt{3x+1} - 1 = \sqrt{3x-6}$

8) $10 = \sqrt{p+6}$

Identify the domain and range of each.

9) $y = \sqrt{x+4}$

A) Domain: $x \geq 0$

Range: $y \geq 4$

B) Domain: $x \leq 0$

Range: $y \geq -4$

C) Domain: { All real numbers. }

Range: { All real numbers. }

D) Domain: $x \geq -4$

Range: $y \geq 0$

10) $y = \frac{4}{5}\sqrt{x-4} - 2$

A) Domain: $x \geq 4$

Range: $y \geq 2$

B) Domain: $x \geq -4$

Range: $y \geq 2$

C) Domain: $x \geq 4$

Range: $y \geq -2$

D) Domain: $x \geq -4$

Range: $y \geq -2$

Write each expression in radical form.

11) $(10n^3)^{\frac{1}{4}}$

A) $(\sqrt{10n})^3$

B) $(\sqrt[4]{5n})^3$

C) $\sqrt[5]{10n}$

D) $\sqrt[4]{10n^3}$

12) $7^{\frac{1}{3}}$

A) $\sqrt[3]{7}$

B) $(\sqrt[3]{7})^4$

C) $(\sqrt[4]{10})^3$

D) $(\sqrt{6})^3$

Write each expression in exponential form.

13) $(\sqrt[5]{10k})^6$

A) $k^{\frac{7}{5}}$

B) $(10k)^{\frac{1}{5}}$

C) $(10k)^{\frac{7}{5}}$

D) $(10k)^{\frac{6}{5}}$

14) $(\sqrt{7})^3$

A) $10^{\frac{1}{2}}$

B) $7^{\frac{5}{2}}$

C) $5^{\frac{1}{3}}$

D) $7^{\frac{3}{2}}$

Simplify. Your answer should contain only positive exponents with no fractional exponents in the denominator.

15) $\left(\frac{5}{p^3}\right)^{\frac{7}{4}} \cdot p^{-\frac{4}{3}} p^{\frac{3}{4}}$

A) $p^{\frac{20}{3}}$

B) $\frac{p^{\frac{1}{8}}}{p^2}$

C) $p^{\frac{7}{3}}$

D) $p^{\frac{5}{8}}$

16) $\left(x^{-\frac{4}{3}} \cdot \left(x^{-\frac{7}{4}} y^{-1}\right)^{\frac{5}{3}}\right)^{-2}$

A) $x^{\frac{37}{144}} y^{\frac{25}{16}}$

B) $x^{\frac{17}{2}} y^{\frac{10}{3}}$

C) $y^3 x^9$

D) x

Answers to Chapter 6 Test (ID: 12)

1) {32}

2) {66}

3) $\frac{2}{9}$

4) $\frac{-8 - 6\sqrt{5}}{29}$

5) $\frac{40 - 64\sqrt{2}}{103}$

6) $3\sqrt{5} - 2\sqrt{10} - 15\sqrt{6} + 20\sqrt{3}$

7) {5}

8) {94}

9) D

10) C

11) D

12) A

13) D

14) D

15) C

16) B