

Practice Test - Exponents and Radicals

Answer Section

MULTIPLE CHOICE

1. ANS: D PTS: 1 DIF: A OBJ: Section 4.1
NAT: AN1 TOP: Square Roots and Cube Roots KEY: area | perfect square
2. ANS: B PTS: 1 DIF: B OBJ: Section 4.1
NAT: AN1 TOP: Square Roots and Cube Roots KEY: cube root
3. ANS: B PTS: 1 DIF: B OBJ: Section 4.1
NAT: AN1 TOP: Square Roots and Cube Roots
KEY: perfect cube | perfect square | square root
4. ANS: D PTS: 1 DIF: A OBJ: Section 4.2
NAT: AN3 TOP: Integral Exponents
KEY: integral exponent | order of operations
5. ANS: A PTS: 1 DIF: B OBJ: Section 4.2
NAT: AN3 TOP: Integral Exponents
KEY: integral exponent | order of operations
6. ANS: A PTS: 1 DIF: B OBJ: Section 4.2
NAT: AN3 TOP: Integral Exponents
KEY: exponent laws | power of a power
7. ANS: C PTS: 1 DIF: B OBJ: Section 4.2
NAT: AN3 TOP: Integral Exponents
KEY: exponent laws | zero exponent | negative exponent
8. ANS: D PTS: 1 DIF: B OBJ: Section 4.2
NAT: AN3 TOP: Integral Exponents
KEY: exponent laws | zero exponent | negative exponent
9. ANS: D PTS: 1 DIF: A OBJ: Section 4.3
NAT: AN3 TOP: Rational Exponents KEY: rational exponent
10. ANS: B PTS: 1 DIF: B OBJ: Section 4.4
NAT: AN3 TOP: Irrational Numbers KEY: convert radical to power
11. ANS: C PTS: 1 DIF: C OBJ: Section 4.3 | Section 4.4
NAT: AN3 TOP: Rational Exponents | Irrational Numbers
KEY: exponent laws | power of a power | convert power to radical
12. ANS: D PTS: 1 DIF: C OBJ: Section 4.4
NAT: AN2 TOP: Irrational Numbers KEY: convert entire radical
13. ANS: B PTS: 1 DIF: C OBJ: Section 3.3 | Section 4.4
NAT: AN3 TOP: Rational Exponents | Irrational Numbers
KEY: negative exponent | convert radical to power
14. ANS: C PTS: 1 DIF: B OBJ: Section 4.4
NAT: AN2 TOP: Irrational Numbers KEY: convert entire radical
15. ANS: C PTS: 1 DIF: B OBJ: Section 4.3 | Section 4.4
NAT: AN2 TOP: Rational Exponents | Irrational Numbers
KEY: negative exponent | convert power to radical

MATCHING

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|----|--------------------|-----------------------------------|--------|--|
| 1. | ANS: D
NAT: AN2 | PTS: 1
TOP: Irrational Numbers | DIF: A | OBJ: Section 4.4
KEY: irrational number |
| 2. | ANS: E
NAT: AN2 | PTS: 1
TOP: Irrational Numbers | DIF: A | OBJ: Section 4.4
KEY: index |
| 3. | ANS: A
NAT: AN2 | PTS: 1
TOP: Irrational Numbers | DIF: A | OBJ: Section 4.4
KEY: radicand |
| 4. | ANS: F
NAT: AN2 | PTS: 1
TOP: Irrational Numbers | DIF: A | OBJ: Section 4.4
KEY: entire radical |
| 5. | ANS: C
NAT: AN2 | PTS: 1
TOP: Irrational Numbers | DIF: A | OBJ: Section 4.4
KEY: mixed radical |
| 6. | ANS: D
NAT: AN2 | PTS: 1
TOP: Irrational Numbers | DIF: A | OBJ: Section 4.4
KEY: irrational number |
| 7. | ANS: B
NAT: AN2 | PTS: 1
TOP: Irrational Numbers | DIF: A | OBJ: Section 4.4
KEY: radical |

COMPLETION

1. ANS: add

PTS: 1 DIF: A OBJ: Section 4.2 | Section 4.3
 NAT: AN3 TOP: Integral Exponents | Rational Exponents
 KEY: exponent laws | product of powers | quotient of powers

2. ANS: multiply

PTS: 1 DIF: A OBJ: Section 4.2 | Section 4.3
 NAT: AN3 TOP: Integral Exponents | Rational Exponents
 KEY: exponent laws | power of a power

3. ANS: zero

PTS: 1 DIF: A OBJ: Section 4.2 | Section 4.3
 NAT: AN3 TOP: Integral Exponents | Rational Exponents
 KEY: exponent laws | zero exponent

4. ANS:
- $\left(\frac{m^2}{n^3}\right)^{\frac{1}{3}}$
- or
- $\frac{m^{\frac{2}{3}}}{n}$

PTS: 1 DIF: B OBJ: Section 4.4 NAT: AN3
 TOP: Irrational Numbers KEY: convert radical to power

SHORT ANSWER

1. ANS:

$$\sqrt{9604} = 98$$

PTS: 1

DIF: B

OBJ: Section 4.1 NAT: AN1

TOP: Square Roots and Cube Roots

KEY: prime factorization

2. ANS:

$$\begin{aligned} \frac{[(a^2bc^4)(ab^3c^2)]^2}{(b^2c^5)^3} &= \frac{[a^3b^4c^6]^2}{b^6c^{15}} \\ &= \frac{a^6b^8c^{12}}{b^6c^{15}} \\ &= a^6b^2c^{-3} \text{ or } \frac{a^6b^2}{c^3} \end{aligned}$$

PTS: 1

DIF: C

OBJ: Section 4.2 NAT: AN3

TOP: Integral Exponents

KEY: exponent laws | product of powers | power of a power | quotient of powers

3. ANS:

a) $(-2.5)^5$

b) $\frac{1}{3^3}$

c) $\frac{1}{t^3}$

PTS: 1

DIF: B

OBJ: Section 4.2 | Section 4.3

NAT: AN3

TOP: Integral Exponents | Rational Exponents

KEY: exponent laws | product of powers | quotient of powers | negative exponent

PROBLEM

1. ANS:

$$\begin{aligned} M &= 240(0.40)^{\frac{3}{2}} \\ &= 60.715731\dots \end{aligned}$$

Approximately 60.7 mg of the drug will remain in the bloodstream after 3 h.

PTS: 1

DIF: D

OBJ: Section 4.3 NAT: AN3

TOP: Rational Exponents

KEY: apply powers | decay