

第七课时 指数及指数幂的运算

1. 若 $\sqrt[4]{a-2}+(a-4)^0$ 有意义, 则 a 的取值范围是()
- A. $(-\infty, 2) \cup (2, +\infty)$ B. $[2, +\infty)$
 C. $(-\infty, 4) \cup (4, +\infty)$ D. $[2, 4) \cup (4, +\infty)$
2. (2020年沈阳高一期中)下列运算不正确的是()
- A. $\sqrt[4]{(3-\pi)^4} = \pi - 3$ B. $3^{2x} = (3^x)^2$
 C. $\sqrt[3]{(a-b)^3} = a-b$ D. $\sqrt{ab} = \sqrt{a} \cdot \sqrt{b}$
3. 有下列各式: ① $(\sqrt[n]{a})^n = a$; ② $x^{-\frac{3}{4}} = \sqrt[3]{\left(\frac{1}{x}\right)^4}$; ③ $a^{\frac{3}{4}} \cdot a^{\frac{4}{3}} = a$; ④ $\sqrt[4]{a^2+b^2} = \sqrt{a+b}$.
 其中正确的个数是()
- A. 0 B. 1
 C. 2 D. 3
4. 化简 $\sqrt[4]{m^6} (m < 0)$ 为()
- A. $m\sqrt{m}$ B. $m\sqrt{-m}$
 C. $-m\sqrt{m}$ D. $-m\sqrt{-m}$
5. (多选)在下列根式与分数指数幂的互化中, 不正确的是()
- A. $(-x)^{0.5} = -\sqrt{x} (x \neq 0)$
 B. $\sqrt[6]{y^2} = y^{\frac{1}{3}}$
 C. $\left(\frac{x}{y}\right)^{\frac{3}{4}} = \sqrt[4]{\left(\frac{y}{x}\right)^3} (xy \neq 0)$
 D. $x^{-\frac{1}{3}} = -\sqrt[3]{x}$
6. 计算 $\frac{(2^{n+1})^2 \cdot \left(\frac{1}{2}\right)^{2n+1}}{4^n \cdot 8^{-2}} (n \in \mathbf{N}^*)$ 的结果为()
- A. $\frac{1}{6^4}$ B. 2^{2n+5}
 C. $2n^2 - 2n + 6$ D. $\left(\frac{1}{2}\right)^{2n-7}$
7. 已知 $a + \frac{1}{a} = 4$, 则 $a^{\frac{1}{2}} - a^{-\frac{1}{2}}$ 等于()

- A. 2
 C. $-\sqrt{2}$
- B. $\sqrt{2}$
 D. $\pm\sqrt{2}$

8. 下列各式中成立的是()

- A. $\left(\frac{n}{m}\right)^7 = n^7 m^{\frac{1}{7}}$
 B. $\sqrt[12]{(-3)^4} = \sqrt[3]{-3}$
 C. $\sqrt[4]{x^3+y^3} = (x+y)^{\frac{3}{4}}$
 D. $\sqrt{\sqrt[3]{9}} = \sqrt[3]{3}$

6. 已知 $x+x^{-1}=3$, 则 $x^2+x^{-2} = \underline{\hspace{2cm}}$; $x^{\frac{1}{2}}+x^{-\frac{1}{2}} = \underline{\hspace{2cm}}$.

7. 若 $\sqrt{x^2+2x+1} + \sqrt{y^2+6y+9} = 0$, 则 $(x^{2021})^y = \underline{\hspace{2cm}}$.

8. 计算 $\sqrt{6\frac{1}{4}} + \left(3\frac{3}{8}\right)^{\frac{1}{3}} + \sqrt[3]{125} = \underline{\hspace{2cm}}$.

9. 已知 $\sqrt{a} - \frac{1}{\sqrt{a}} = \frac{3}{2}$, 则 $\sqrt{a} + \frac{1}{\sqrt{a}} = \underline{\hspace{2cm}}$.

10. 化简与计算:

(1) $8^{\frac{2}{3}} - (0.5)^{-3} + \left(\frac{1}{\sqrt{3}}\right)^{-6} \times \left(\frac{81}{16}\right)^{-\frac{3}{4}}$;

(2) $(a^{-2}b^{-3}) \cdot (-4a^{-1}b) \div (12a^{-4}b^{-2}c)$;

(3) $a\sqrt{3} \cdot a^{-\sqrt{3}} + (2\sqrt{2})^2 \sqrt[2]{2} (a > 0)$.