

Exponents

1. $(2^3)(2^2)(2^7) = ?$

- A. 8^{12}
- B. 2^{12}
- C. 6^{12}
- D. 8^{47}
- E. 2^{47}

2. $64^{\frac{1}{2}} - 8^2 = ?$

- A. 8^{-1}
- B. 56
- C. -56
- D. -8
- E. $\frac{1}{8}$

3. $3^2 + \frac{2^3}{8^2} = ?$

- A. 13
- B. $9\frac{1}{8}$
- C. $3\frac{2}{8}$
- D. 10
- E. 11

4. $4^{\frac{1}{2}} + 2 = ?$

- A. 18
- B. 16
- C. 8
- D. 4
- E. 2

5. $2^{\frac{1}{2} + \frac{2}{4}} = ?$

- A. 5
- B. 4
- C. 2
- D. 0
- E. 1

6. $16^{\frac{3}{4}} + 32^{\frac{1}{5}} = ?$

- A 5
- B 10
- C 15
- D 20
- E 25

7. $16^{\frac{1}{2}} - 2^8 = ?$

- A 254
- B -252
- C -254
- D -260
- E 260

8. $(4^4)(2^3)(64) = ?$

- A. 2^{17}
- B. 1024
- C. 66036
- D. 512
- E. 66^7

9. $3^2 + 81^{\frac{1}{2}} - 3^3 = ?$

- A. 3^{-1}
- B. 3
- C. 9
- D. 18
- E. -9

10. $4 - \frac{2^4}{(2^2)(2^3)} = ?$

- A. $3\frac{1}{4}$
- B. $3\frac{1}{2}$
- C. $2^2 - \frac{1}{2^8}$
- D. 2^{-1}
- E. 2^2

EXPONENTS ANSWERS**1. B**

When multiplying numbers with powers, if bases are the same (in our case they are all 2), you need to add powers and leave the base the same. $3+2+7=12$, so the answer is 2^{12}

2. C

$a^{\frac{2}{3}} = \sqrt[3]{a^2}$, so, in our example, $64^{\frac{1}{2}} = \sqrt{64} = 8$. $8 - 64 = -56$

3. B

Simplify $\frac{2^3}{8^2} = \frac{2^3}{(2^3)^2}$. The denominator is solved this way: $(2^3)^2 = 2^{2*3} = 2^6$. Powers in this case are multiplied. Then simplify

further: $\frac{2^3}{(2^3)^2} = \frac{2^3}{2^6} = \frac{2^3}{2^3(2^3)} = \frac{1}{2^3} = \frac{1}{8}$. The last step is $9 + \frac{1}{8} = 9\frac{1}{8}$.

4. D

We can simplify the expression as follows:

$$(4^{1/2}) = (2^2)^{1/2}$$

$$(2^{1/2})^2 + 2 = 4$$

5. C

We can simplify the exponent as follows:

$$2^{\frac{1+2}{4}} = 2^{\frac{2+2}{4}} = 2^{\frac{4}{4}} = 2^1 = 2$$

6. B

We can simplify the exponent as follows:

$$16^{\frac{3}{4}} + 32^{\frac{1}{5}} = (2^4)^{\frac{3}{4}} + (2^5)^{\frac{1}{5}} = 2^3 + 2 = 10$$

7. B

We can simplify the expression as follows:

$$16^{\frac{1}{2}} - 2^8 = (2^4)^{\frac{1}{2}} - 2^8 = 2^2 - 2^8 = 4 - 256 = -252$$

8. A

We can simplify the expression as follows:

$$\begin{aligned}(4^4)(2^3)(64) &= (2^2)^4(2^3)(2^6) = (2^8)(2^3)(2^6) \\ &= 2^{8+3+6} = 2^{17}\end{aligned}$$

9. E

We can simplify the expression as follows:

$$3^2 + 81^{\frac{1}{2}} - 3^3 = 3^2 + (3^4)^{\frac{1}{2}} - 3^3 = 9 + 3^2 - 27 = -9$$

10. B

$$4 - \frac{2^4}{(2^2)(2^3)} = 4 - \frac{2^4}{2^{2+3}} = 4 - \frac{2^4}{2^5} = 4 - \frac{2^4}{2^1} = 4 - \frac{1}{2} = \frac{7}{2} = 3\frac{1}{2}$$