

SATPREP

Assignment : *Radical*

- Which of the following is equal to $b^{-\frac{1}{2}}$ for all values of b for which the expression is defined?
 - $\frac{b}{b^2}$
 - $\frac{\sqrt{b}}{b}$
 - $\frac{1}{\sqrt{2b}}$
 - $\frac{1}{2}b$
- Which expression is equivalent to $(9x^2y^6)^{-\frac{1}{2}}$?
 - $\frac{1}{3xy^3}$
 - $3xy^3$
 - $\frac{3}{xy^3}$
 - $\frac{xy^3}{3}$
- If $4^y + 4^y + 4^y + 4^y = 16^x$, then $y =$
 - $2x - 1$
 - $2x + 1$
 - $x - 2$
 - $x + 2$
- If $\sqrt{m} = 2p$, then $m^{\frac{3}{2}} =$
 - $\frac{p}{3}$
 - $2p^2$
 - $6p^3$
 - $8p^3$
- If $3^x = 81$ and $2^{x+y} = 64$, then $\frac{x}{y} =$
 - 1
 - $\frac{3}{2}$
 - 2
 - $\frac{5}{2}$
- Which of the following is equal to $y^{\frac{3}{2}}$ for all values of y for which the expression is defined?

- (A) $\sqrt[3]{y^2}$
- (B) $\sqrt{y^3}$
- (C) $\sqrt[3]{y^{\frac{1}{2}}}$
- (D) $3\sqrt{y}$

7. Which expression is equivalent to $\frac{(2xy)^{-2}}{4y^{-5}}$?

- (A) $-\frac{y^3}{x^2}$
- (B) $-\frac{y^3}{16x^2}$
- (C) $\frac{y^3}{x^2}$
- (D) $\frac{y^3}{16x^2}$

8. If $10^k = 64$, what is the value of $10^{\frac{k}{2}+1}$?

- (A) 18
- (B) 42
- (C) 80
- (D) 81

9. If x is a positive integer greater than 1, how much greater than x^2 is $x^{\frac{5}{2}}$?

- (A) $x^2(1-x^{\frac{1}{2}})$
- (B) $x^{-\frac{1}{2}}$
- (C) $x^2(x^{\frac{1}{2}}-1)$
- (D) $x^{\frac{1}{2}}$

10. The expression $\frac{x^2}{\sqrt{x^3}}$ is equivalent to

- (A) $\sqrt[3]{x}$
- (B) $\frac{1}{\sqrt{x}}$
- (C) \sqrt{x}
- (D) $\frac{1}{\sqrt[3]{x^2}}$

11. If n and p are positive integers such that $8(2^p) = 4^n$, what is n in terms of p ?

- (A) $\frac{p+2}{3}$
- (B) $\frac{2p}{3}$
- (C) $\frac{p+3}{2}$
- (D) $\frac{3p}{2}$

$$2\sqrt{x-k} = x-6$$

12. If $k = 3$, what is the solution of the equation above?

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- (A) {4, 12}
 - (B) {3}
 - (C) {4}
 - (D) {12}

13. When $x^{-1} - 1$ is divided by $x - 1$, the quotient is

- (A) -1
- (B) $\frac{1}{x}$
- (C) $\frac{1}{x^2}$
- (D) $\frac{1}{(x-1)^2}$

14. If n is a negative integer, which statement is *always* true?

- (A) $6n^{-2} < 4n^{-1}$
- (B) $\frac{n}{4} > -6n^{-1}$
- (C) $6n^{-1} < 4n^{-1}$
- (D) $4n^{-1} > (6n)^{-1}$

$$g(x) = a\sqrt{a(1-x)}$$

15. Function g is defined by the equation above. If $g(-8) = 375$, what is the value of a ?

- (A) 25
- (B) 75
- (C) 125
- (D) 625

16. If $27^x = 9^{y-1}$, then

- (A) $y = \frac{3}{2}x + 1$
- (B) $y = \frac{3}{2}x + 2$
- (C) $y = \frac{3}{2}x + \frac{1}{2}$
- (D) $y = \frac{1}{2}x + \frac{2}{3}$

Grid-In

$$\sqrt{3p^2 - 11} - x = 0$$

1. If $p > 0$ and $x = 8$ in the equation above, what is the value of p ?
2. If $x^{-\frac{1}{2}} = \frac{1}{8}$, what is the value of $x^{\frac{2}{3}}$?
3. If y is not equal to 0, what is the value of $\frac{6(2y)^{-2}}{(3y)^{-2}}$?

4. If $(2rs)^{-1} = 3s^{-2}$, what is the value of $\frac{r}{s}$?
5. If m and p are positive integers and $(2\sqrt{2})^m = 32^p$, what is the value of $\frac{p}{m}$?
6. If a , b , and c are positive numbers such that $\sqrt{\frac{a}{b}} = 8c$ and $ac = b$, what is the value of c ?
7. If $k = 8\sqrt{2}$ and $\frac{1}{2}k = \sqrt{3h}$, what is the value of h ?
8. If $64^{2n+1} = 16^{4n-1}$, what is the value of n ?

$$\frac{\sqrt[3]{a^8}}{(\sqrt{a})^3} = a^x, \text{ where } a > 1$$

9. In the equation above, what is the value of x ?
10. A meteorologist estimates how long a passing storm will last by using the function $t(d) = 0.08d^{\frac{3}{2}}$, where d is the diameter of the storm, in miles, and t is the time, in hours. If the storm lasts 16.2 minutes, find its diameter, in miles.

