

The best way to study for this test is by practicing! Be able to do all the problems that were on your quizzes that were given during this unit as well as the practice problems from your notes. Know your vocabulary (be able to recognize the radicand and the index in a problem). Below are additional practice problems for the test.

**Practice Problems for the Test:**

*Simplify Completely:*

A.  $\frac{\sqrt{200a^2b^2c^{11}}}{\sqrt{100 \cdot 2 a^2 b^2 c^{11}}}$   
 $= 10 a b c^5 \sqrt{2c}$

B.  $\sqrt{\frac{y^4}{16z^8}} = \frac{y^2}{4z^4}$

C.  $\sqrt[3]{-8a^4b^9c^{11}}$   
 $-2ab^3c^3 \sqrt[3]{ac^2}$

D.  $\sqrt[3]{1 + \sqrt[3]{16}}$   
 $1 + 2 = 3$

E.  $\sqrt[6]{a^6b^{12}} = ab^2$

F.  $\sqrt{-4v^2}$  No Real solution

G.  $64^{\frac{1}{3}} = \frac{1}{64^{\frac{1}{3}}} = \frac{1}{4}$

*Express the following in exponential form:*

H.  $\sqrt{7} = (7)^{\frac{1}{2}}$

I.  $\sqrt{c^3} = c^{\frac{3}{2}}$

J.  $\sqrt[4]{4a^5}$   
 $4^{\frac{1}{4}} a^{\frac{5}{4}}$

K.  $\sqrt[5]{(4a)^5}$   
 $4^{\frac{5}{5}} a^{\frac{5}{5}}$

*Express the following in radical form:*

L.  $1^{\frac{3}{4}} = \sqrt[4]{1^3} = 1$

M.  $r^{\frac{1}{3}} = \sqrt[3]{r}$

N.  $5^{\frac{1}{2}} = \frac{1}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}}$   
 $= \frac{\sqrt{5}}{5}$

O.  $7a^{\frac{2}{3}}b^{\frac{5}{4}}$   
 $7 a^{\frac{8}{12}} b^{\frac{15}{12}}$   
 $= 7 \sqrt[12]{a^8 b^{15}}$   
 or  $7b^{\frac{12}{12}} \sqrt[12]{a^8 b^3}$

*Simplify Completely. Answer should be in radical form.*

P.  $(\sqrt{2})^3 = 2\sqrt{2}$

Q.  $\sqrt[3]{24} - \sqrt[3]{81} + \sqrt[3]{3}$   
 $\sqrt[3]{8 \cdot 3} - \sqrt[3]{27 \cdot 3} + \sqrt[3]{3}$   
 $= 2\sqrt[3]{3} - 3\sqrt[3]{3} + \sqrt[3]{3}$   
 $= 0$

R.  $\frac{1}{\sqrt[4]{2}}$   
 $\frac{1}{\sqrt[4]{2}} \cdot \frac{\sqrt[4]{2^3}}{\sqrt[4]{2^3}} = \frac{\sqrt[4]{8}}{2}$

*Simplify Completely. Answer should be in exponential form.*

S.  $\frac{1}{r^{\frac{1}{4}}} \cdot \frac{r^{\frac{3}{4}}}{r^{\frac{3}{4}}} = \frac{r^{\frac{3}{4}}}{r}$

T.  $3^{\frac{1}{2}} = \frac{1}{3^{\frac{1}{2}}} \cdot \frac{3^{\frac{1}{2}}}{3^{\frac{1}{2}}} = \frac{3^{\frac{1}{2}}}{3}$

*Solve.*

U.  $\sqrt{x-1} = -17$

No Solution  
 ( $4^{\text{th}}$  root or any even-index root should be positive)

V.  $x+1 = x\sqrt{2}$

$1 = x\sqrt{2} - x$   
 $1 = x(\sqrt{2} - 1)$   
 $x = \frac{1}{(\sqrt{2} - 1)} \cdot \frac{(\sqrt{2} + 1)}{(\sqrt{2} + 1)}$

W.  $(5a-5)^{\frac{1}{3}} + 1 = 3$

$(5a-5)^{\frac{1}{3}} = 2$   
 $((5a-5)^{\frac{1}{3}})^3 = 2^3$   
 $5a-5 = 8$   
 $5a = 13$   
 $a = \frac{13}{5}$

*S.A.T. Pracice.*

X. If  $x^{-2} = 16$ , what is the value of  $x^2$ ?

- (a)  $\frac{1}{16}$  (b)  $\frac{1}{4}$  (c) 2 (d) 4 (e) 12

$\frac{1}{x^2} \neq \frac{16}{1}$   $16x^2 = 1$   
 $x^2 = \frac{1}{16}$

$x = \frac{\sqrt{2} + 1}{2 - 1} = \sqrt{2} + 1$