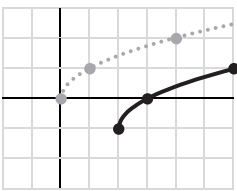


**LESSON 171** .....

1.  $\sqrt{24} = \sqrt{4 \cdot 6} = \sqrt{4} \cdot \sqrt{6} = 2\sqrt{6}$
2.  $\sqrt{\frac{27}{x^4}} = \frac{\sqrt{27}}{\sqrt{x^4}} = \frac{\sqrt{9 \cdot 3}}{\sqrt{(x^2)^2}} = \frac{\sqrt{9} \cdot \sqrt{3}}{x^2} = \frac{3\sqrt{3}}{x^2}$
3. The answer is C.  
 $2 = \sqrt{4} = \sqrt[3]{8} = \sqrt[4]{16} = \sqrt[5]{32} = \sqrt[6]{64}$
4.  $\sqrt[4]{\frac{x^5}{81}} = \frac{\sqrt[4]{x^5}}{\sqrt[4]{81}} = \frac{\sqrt[4]{x^4 \cdot x}}{3} = \frac{\sqrt[4]{x^4} \cdot \sqrt[4]{x}}{3} = \frac{x\sqrt[4]{x}}{3}$
5.  $\sqrt{20} + 2\sqrt{45} - 3\sqrt{5} = 2\sqrt{5} + 6\sqrt{5} - 3\sqrt{5} = 5\sqrt{5}$
6.  $\sqrt{3}(\sqrt{6} - \sqrt{27}) + 2\sqrt{18}$   
 $= \sqrt{18} - \sqrt{81} + 2\sqrt{18} = -9 + 3\sqrt{18} = -9 + 9\sqrt{2}$   
 $a/b = (-9)/9 = -1$
7.  $\frac{1}{2 + \sqrt{3}} = \frac{1}{2 + \sqrt{3}} \cdot \frac{2 - \sqrt{3}}{2 - \sqrt{3}} = \frac{2 - \sqrt{3}}{4 - 3} = 2 - \sqrt{3}$   
 $ab = 2(-1) = -2$
8. The answer is B.  
 A)  $8^{2/3} = (2^3)^{2/3} = 2^2 = 4$   
 B)  $27^{2/3} = (3^3)^{2/3} = 3^2 = 9$   
 C)  $25^{1/2} = (5^2)^{1/2} = 5$   
 D)  $32^{3/5} = (2^5)^{3/5} = 2^3 = 8$
9.  $x^{1/5}(x^{2/5})^{3/2} = x^{1/5} \cdot x^{3/5} = x^{4/5} = \sqrt[5]{x^4}$   
 $m - n = 5 - 4 = 1$
10.  $8 - \sqrt{2x + 3} = 5$   
 $\sqrt{2x + 3} = 3$  Isolate the radical.  
 $2x + 3 = 9$  Square both sides.  
 $x = 3$  Solve for  $x$ .
11.  $x + 1 = \sqrt{3x + 1}$   
 $(x + 1)^2 = 3x + 1$  Square both sides.  
 $x^2 - x = 0$  Standard form  
 $x(x - 1) = 0$  Solve for  $x$ .  
 $x = 0, x = 1$

12.  $\sqrt{x + 2} = 1 + \sqrt{3 - x}$  Isolate one radical.  
 $(\sqrt{x + 2})^2 = (1 + \sqrt{3 - x})^2$  Square both sides.  
 $x + 2 = 1 + 2\sqrt{3 - x} + 3 - x$  Simplify.  
 $\sqrt{3 - x} = x - 1$  Isolate the radical.  
 $3 - x = (x - 1)^2$  Square both sides.  
 $x^2 - x - 2 = 0$  Solve for  $x$ .  
 $(x + 1)(x - 2) = 0$   
 $x = -1, x = 2$   
 $x = -1$  is extraneous, so the solution is  $x = 2$ .
13.  $x^{3/4} = 27$   
 $(x^{3/4})^{4/3} = 27^{4/3}$  Raise to the reciprocal power. Then simplify.  
 $x = 27^{4/3} = (3^3)^{4/3}$   
 $x = 3^4 = 81$
14.  $(x^2 - 1)^{1/3} = 2$   
 $[(x^2 - 1)^{1/3}]^3 = 2^3$  Cube both sides.  
 $x^2 - 1 = 8$  Simplify.  
 $x^2 = 9$  Solve for  $x$ .  
 $x = 3, x = -3$   
 $mn = 3(-3) = -9$
15. The answer is B.  
 $f(x)$  is  $y = \sqrt{x}$  reflected over the  $y$ -axis.
16. The answer is C.  
 The graph involves a reflection of  $y = \sqrt{x}$  over the  $x$ -axis, so eliminate A and B.  
 $(0, 1)$  is on the graph, so choose C.
17. The answers are B and C.  
 The graph involves a reflection of  $y = \sqrt[3]{x}$  over either the  $x$ - or  $y$ -axis, so eliminate A.  
 The graph involves a vertical shift, so eliminate D.  
 B and C have the same shape because  $\sqrt[3]{-x} = -\sqrt[3]{x}$ .
18. The answers are A, C, and D.  

 Sketch the graph.  $f(x)$  is  $y = \sqrt{x}$  shifted right 2 units and down 1 unit.  
 B) The range is  $[-1, \infty)$ .
19. The width, height, and diagonal form a right triangle.  
 Let  $x$  = height of the monitor.  
 By The Pythagorean Theorem,  $12^2 + x^2 = 15^2$ .  
 Solve for  $x$ , and you get  $x = 9$ .  
 The height is 9 inches.

20.  $\sqrt{(k-1)^2 + (1-3)^2} = \sqrt{13}$

$(k-1)^2 + (1-3)^2 = 13$       Square both sides.

$k^2 - 2k - 8 = 0$       Standard form

$(k+2)(k-4) = 0$       Solve for  $k$ .

$k = -2, k = 4$

$k > 0$ , so  $k = 4$ .