LESSON 171 Review: Radical Equations and Functions

Try to complete as fast as you can. You may use a calculator unless otherwise specified.

1. $\sqrt{24}$

Simplify the expression above.

2. $\sqrt{\frac{27}{x^4}}$

Simplify the expression above. Assume x is positive.

3. Which expression is NOT equal to $\sqrt{4}$?

A) $\sqrt[3]{8}$ B) $\sqrt[4]{16}$

C) $\sqrt[5]{24}$ D) $\sqrt[6]{64}$

4. $\sqrt[4]{\frac{x^5}{81}}$

Simplify the expression above. Assume x is positive.

5. $\sqrt{20} + 2\sqrt{45} - 3\sqrt{5}$

Simplify the expression above.

6. $\sqrt{3}\left(\sqrt{6} - \sqrt{27}\right) + 2\sqrt{18}$

If the expression above is written in the form $a + b\sqrt{2}$, what is the value of a/b ?

7. $\frac{1}{2 + \sqrt{3}}$

If the expression above is written in the form $a + b\sqrt{3}$, what is the value of ab ?

8. Which expression evaluates to the largest value?

A) $8^{2/3}$ B) $27^{2/3}$

C) $25^{1/2}$ D) $32^{3/5}$

9. $x^{1/5}\left(x^{2/5}\right)^{3/2}$

If the expression above is written in the form $\sqrt[m]{x^n}$, what is the value of $m - n$?

10. $8 - \sqrt{2x + 3} = 5$

Solve the equation above.

11. $x + 1 = \sqrt{3x + 1}$

Solve the equation above.

12. $\sqrt{x + 2} - \sqrt{3 - x} = 1$

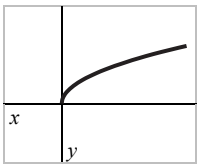
Solve the equation above.

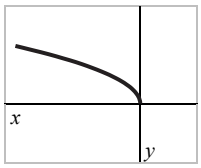
13. If $x^{3/4} = 27$, what is the value of x ?

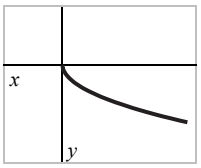
14. $(x^2 - 1)^{1/3} = 2$

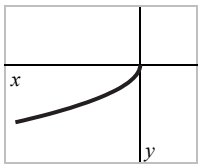
If m and n are the solutions to the equation above, what is the value of mn ?

15. Which could be the graph of $f(x) = \sqrt{-x}$?

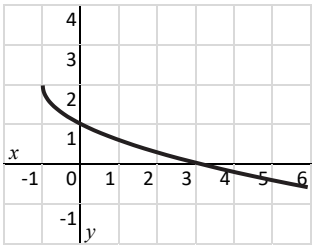
A) 

B) 

C) 

D) 

16. Which function is graphed below?



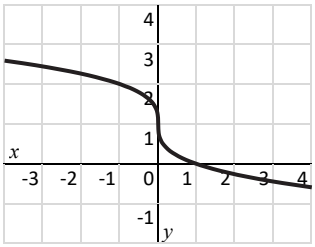
A) $f(x) = \sqrt{x + 1} + 2$

B) $f(x) = \sqrt{x - 1} + 2$

C) $f(x) = -\sqrt{x + 1} + 2$

D) $f(x) = -\sqrt{x - 1} + 2$

17. Which function is graphed below? Select all that apply.



A) $f(x) = \sqrt[3]{x} + 1$

B) $f(x) = \sqrt[3]{-x} + 1$

C) $f(x) = -\sqrt[3]{x} + 1$

D) $f(x) = -\sqrt[3]{x - 1}$

18. $f(x) = \sqrt{x - 2} - 1$

Which statement is true about the function above? Select all that apply.

A) The domain is $[2, \infty)$.

B) The range is $[1, \infty)$.

C) The x-intercept is $(3, 0)$.

D) As x increases, $f(x)$ increases.

19. The diagonal of a monitor is 15 inches. The width of the monitor is 12 inches. What is the height of the monitor?

20. $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

The formula above gives the distance between two points (x_1, y_1) and (x_2, y_2). If the distance between $(1, 3)$ and $(k, 1)$ is $\sqrt{13}$ and $k > 0$, what is the value of k ?