LESSON 179 Final Exam Practice Test

This is a practice test for your final exam. It is usually a good practice to take a practice test just like a real exam. Read the directions in Lesson 180. When you are ready, begin the test.

1. $3|x-1|+4=7$

What is the sum of the solutions to the equation above?

2. A line is parallel to $2x-y=1$ and passes through $(-1, 2)$. If the line has a x-intercept of a and a y-intercept of b, what is the value of $a+b$?

3. $y=x-5$

$2x+y=4$

If (x, y) satisfies the system of equations above, what is the value of $x+y$?

4. $(x-2)(x+3)=5x-1$

If p and q are two solutions to the equation above, what is the value of pq ?

5. $f(x)=x^2(x+2)(x-4)$

Over which interval is the function above negative? Select all that apply.

A) $(-\infty, -2)$ B) $(-2, 0)$

C) $(0, 4)$ D) $(4, \infty)$

6. $\dfrac{(5x^2)(2x^3)^2}{(x^3)^4}$

If the expression above is written in the form ax^k, what is the value of a/k ?

7. $4^{x-1}=8^x$

What value of x satisfies the equation above?

8. $f(x)=2^{-x}+1$

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

A) The y-intercept is 1.

B) The asymptote is $y=1$.

C) As x increases, $f(x)$ decreases.

D) The graph is in Quadrants III and IV.

E) The graph is the same as the graph of $y=2^x$ reflected over the y-axis and shifted up 1 unit.

9. The bear population in an area is 300 and is decreasing at a rate of 10% per year. Write an exponential function in the form $y=ab^x$ that models the bear population, y, after t years.

10. $\log_2 1 + \log_2 2 - \log_2 16$

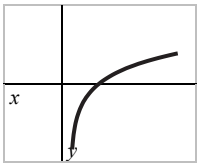
What is the value of the expression above?

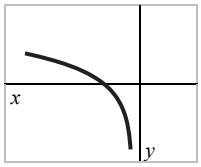
11. $\log x + \log(x + 8) = 2 \log 3$

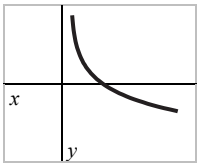
Find all values of x that satisfy the equation above. Be sure to check for extraneous solutions.

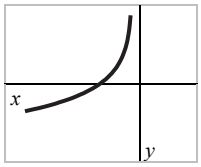
12. $f(x) = -\log_2 x$

Which could be the graph of the function above?

A) 

B) 

C) 

D) 

13. If $\$3{,}000$ is deposited into an account that earns 4% interest compounded annually, how long will it take the balance to double? Round your answer to the nearest year.

14. $\sqrt[3]{27} + 16^{3/4}$

What is the value of the expression above?

15. $y^{1/3}\left(y^{1/2}\right)^{2/3}$

Which expression is equivalent to the expression above?

A) $\sqrt[2]{y^3}$ B) $\sqrt[3]{y^2}$

C) $\sqrt[5]{y^6}$ D) $\sqrt[6]{y^5}$

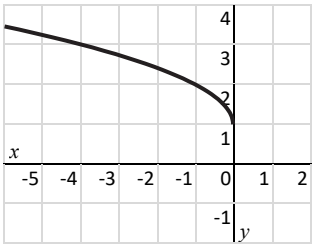
16. $x + 1 = \sqrt{5 - x}$

Find all values of x that satisfy the equation above. Be sure to check for extraneous solutions.

17. $(2x + 1)^{3/2} = 27$

If x satisfies the equation above, what is the value of $x^{1/2}$?

18. Which function is graphed below?



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

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

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

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

19. $\dfrac{\dfrac{1}{x+1}}{\dfrac{2}{x}-\dfrac{1}{x+1}}$

Simplify the expression above.

20. $\dfrac{x}{x-1}-\dfrac{4}{x}=\dfrac{1}{x^2-x}$

Find all values of x that satisfy the equation above. Be sure to check for extraneous solutions.

21. $f(x)=\dfrac{1}{x-3}-1$

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

A) The vertical asymptote is $x=3$.

B) The horizontal asymptote is $y=1$.

C) The graph is in all four quadrants.

D) The graph can be obtained by shifting the graph of $y=1/x$.

22. Liam can paint twice as fast as Alex. Working together, they can paint a house in 8 hours. How long will it take Liam to paint the house alone?

23. $x^2+y^2-2x+4y-4=0$

Which statement is true about the circle defined by the equation above?

A) center $(1,-2)$, radius $=3$

B) center $(-1,2)$, radius $=3$

C) center $(1,-2)$, radius $=9$

D) center $(-1,2)$, radius $=9$

24. $y=(x-2)^2-3$

$2x+y=4$

If (x,y) is a solution to the system above and $x>0$, what is the value of $x-y$?

25. $(x+2)^2+y^2=8$

$y=-x+2$

How many times do the graphs of the equations above intersect?

26. In a certain sequence, the first term is 2 and each term after the first is 3 more than the previous term. What is the 15th term of the sequence?

27. $2, 6, 18, 54, \ldots$

What is the sum of the first 10 terms of the sequence above?

28. 7, 3, 7, 6, 1, 9

What is the positive difference between the median and mean of the data set above?

29. A random poll of 300 registered voters in a city found that 240 of them will vote for a certain policy. If there are 15,000 registered voters in the city, what is a reasonable estimate of the number of voters who will vote for the policy?

30. A survey of 40 students found that 14 of them have cats, 18 have dogs, and 4 have both a cat and a dog. What is the probability that a randomly selected student has neither cats nor dogs?

STOP

This is the end of the test.
Review your answers before grading.