Quarter 1 Benchmark Review

1. If , then

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2. You have been asked to solve for *x*. What would your first step be? Now solve the equation.

3. Assume and are inverses of one another and drawn on the same graph with the same scale on both the horizontal and vertical axis. What is true of the graph?

4. If , then x= \_\_\_\_\_\_\_\_

5. If , then x= \_\_\_\_\_\_\_\_

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6. Complete the definition of Logarithm: *For all positive numbers a, where a ≠ 1, and all positive numbers x, means the same as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.*

7. Name three different ways to write .

8. Find the inverse of ?

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9. Name three different ways to write ?

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10. a. Draw a graph of



b. Draw a graph of



11. If , is it possible for *c* to equal a negative number? Explain.

12. Simplify ?

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13. Expand

14. Write equivalent statements to the following argument. .

15. We know that and are *inverses* of one another. What can you conclude about this inverse relationship?

16. Simplify

a.

b.

c.

d.

17. If , then

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18. What is the base of ?

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19. Find a point on the graph of ?

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20. What is the first step in solving 3 for *x*?

*Draw an example of each of the following*

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| --- | --- | --- |
| \_\_\_\_\_\_ 21. | Linear |  |
| \_\_\_\_\_\_ 22. | Exponential |  |
| \_\_\_\_\_\_ 23. | Quadratic |  |
| \_\_\_\_\_\_ 24. | Cubic |  |
| \_\_\_\_\_\_ 25. | Logarithmic |  |

26. Label the above functions as whether they or NOT also be considered a polynomial function.

Simplify (on 30 and 31 use definition of log)

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| --- | --- | --- | --- |
| \_\_\_\_\_\_ 27. |  |  |  |
| \_\_\_\_\_\_ 28. |  |  |  |
| \_\_\_\_\_\_ 29. |  |  |  |
| \_\_\_\_\_\_ 30. |  |  |  |
| \_\_\_\_\_\_ 31. |  |  |  |

32. If you know that , then give an example of possibilities for and .

a. Give a linear example

b. Give a quadratic example

c. Give a cubic example

33. If and , then

34. If a linear equation has a slope of and a y-intercept of 2, then what do you know about the end behavior as ?

35. Are they increasing?

a. Give an example that is always increasing and explain how you know.

b. Give an example that is always decreasing and explain how you know.

c. Give an example that is increasing and decreasing and explain how you know.