Name: **Date:**
Instructor: **Section:**

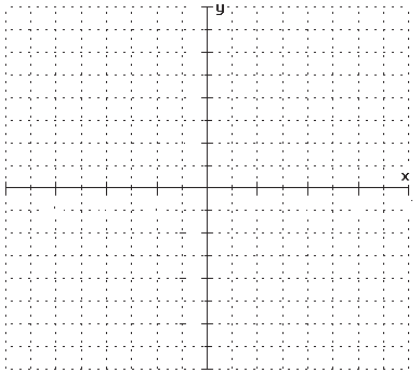
Chapter 9 Test Form A

For $f(x) = 2x - 3$ and $g(x) = x^2 + 9$, find the following:

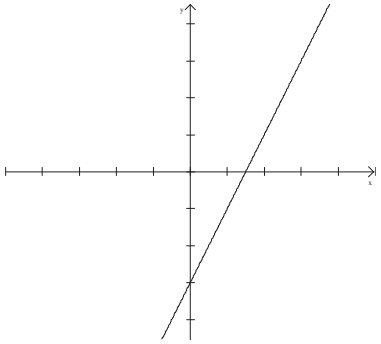
1. $(f \circ g)(x)$ **1.** _____

2. $(g \circ f)(x)$ **2.** _____

3. Graph $f(x) = x - 4$ and its inverse on the same set of axes.



4. Determine if the function below is one-to-one. **4.** _____



5. Find the inverse of $f(x) = \dfrac{2}{x+3}$. **5.** _____

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Chapter 9 Test Form A *cont'd*

6. Find the inverse of $F = \{(0, 1), (1, 2), (2, 3), (3, 4)\}$. **6.** _____

Use the properties of logarithms to write each expression as a single logarithm.

7. $\log_{12} x + \log_{12} 5$ **7.** _____

8. $2\log_9 (x+1) - \log_9 y$ **8.** _____

9. Write the expression $\log_6 \dfrac{3x}{y^2}$ as the sum or difference of multiples of logarithms. **9.** _____

10. If $\log_b 3 = 0.8$ and $\log_b 6 = 1.3$, find the value of $\log_b 18$. **10.** _____

11. Approximate $\log_6 22$ to four decimal places. **11.** _____

12. Solve $3^{x-2} = \dfrac{1}{9}$. **12.** _____

13. Solve $4^{x+5} = 6$. Approximate the solution to four decimal places. **13.** _____

14. Simplify $-\log_5 625$. **14.** _____

Solve each logarithmic equation.

15. $\log_5 x = -3$ **15.** _____

16. $\ln e^5 = 3x$ **16.** _____

17. $\log_7 4 + \log_7 x = 3$ **17.** _____

18. $2\log x - \log 7 = \log 112$ **18.** _____

19. Solve $\ln(5x-2) = 12$. Approximate the solution to four decimal places. **19.** _____

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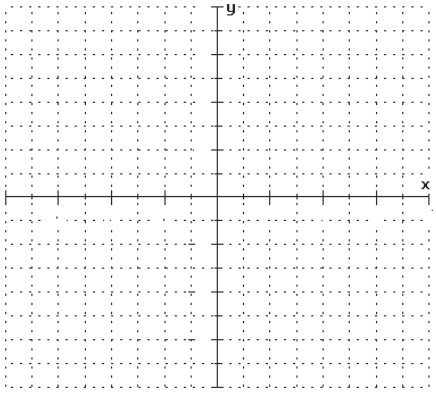
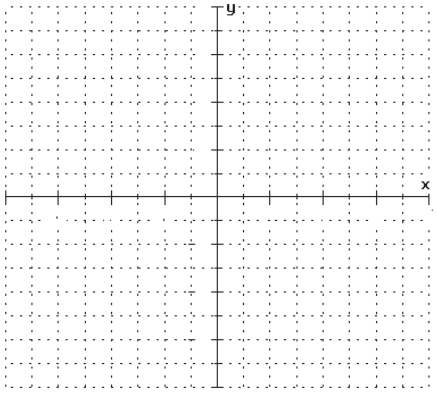
Chapter 9 Test Form A *cont'd*

Graph.

20. $y = 2^x + 3$



21. $y = \log_2 x$



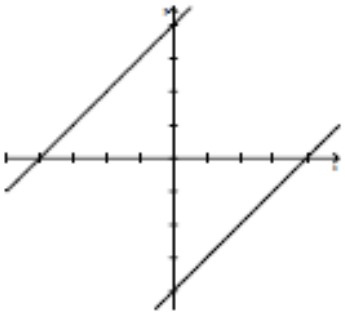
22. Using the formula $A = P\left(1 + \frac{r}{n}\right)^{nt}$, find how long it takes a \$600 investment to grow to \$700 if it is invested at 8% interest compounded monthly. **22.** _____

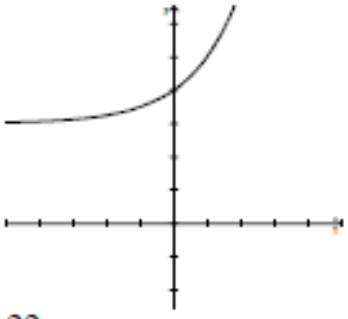
23. Using the formula $w = 0.00185h^{2.67}$, where w is a boy's weight and h is his height in inches, estimate the height of a boy whose weight is 100 pounds. **23.** _____

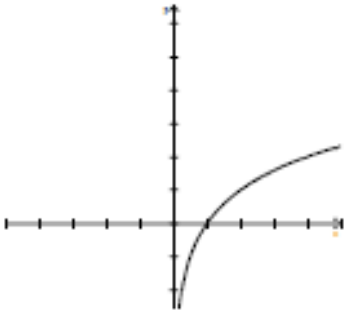
24. A town with a population of 45,500 people increases by 3% per year. If this rate continues, what will the population of the town be in 12 years? Use the equation $y = C(1 + r)^x$ and round the answer to the nearest whole number. **24.** _____

25. A 50-kg sample of a radioactive substance has a half-life of 30 years. How much of the substance will be left after 28 years? Round your answer to the nearest hundredth. **25.** _____

Test 9 – A

1. $2x^2+15$
2. $4x^2-12x+18$
3. 
4. Yes
5. $f^{-1}(x)=\dfrac{2-3x}{x}$
6. $f^{-1}(x)=\{(1, 0),\ (2, 1), (3, 2), (4, 3)\}$
7. $\log_{12} 5x$
8. $\log_9 \dfrac{(x+1)^2}{y}$
9. $\log_6 3+\log_6 x-3\log_6 y$
10. 2.1
11. 1.7251
12. 0
13. −3.7075
14. −4
15. $\dfrac{1}{125}$
16. $\dfrac{5}{3}$
17. $\dfrac{343}{4}$
18. 28
19. 32551.3583

21. 

22. 

22. 2 years
23. 59.2 inches
24. 64,872 people
25. 26.18 kg