Accelerated Geomtry CC   Name_____

16.1-16.3 Quiz Review   Date_____ Period____

Condense each expression to a single logarithm.

1) $75 + 5\log_2 7$

2) $4\log_3 w + \dfrac{\log_3 u}{3}$

3) $25\log_4 3 + 5\log_4 8$

4) $4\log_5 7 + \dfrac{\log_5 12}{3}$

5) $4\log_3 a - 8\log_3 b$

Expand each logarithm.

6) $\log_8 \left(x^6 \cdot y\right)^6$

7) $\log_9 \left(z\sqrt[3]{x \cdot y}\right)$

8) $\log_9 \left(\dfrac{2}{3^3}\right)^5$

9) $\log_7 \left(\dfrac{12}{5^2}\right)^5$

10) $\log_7 \left(z\sqrt{x \cdot y}\right)$

Solve each equation. Round your answers to the nearest ten-thousandth.

11) $17^{5v} + 9 = 65$

12) $12^{n+10} - 4 = 80$

13) $14^{x+5} - 8 = 32$

14) $6e^{v+5} = 26$

15) $-4e^{8a} = -61$

Solve each equation.

16) $5^{3x} = 5^{3x}$

17) $32^{2x-2} \cdot 16^{3x} = 1$

18) $\log_3 (-4n + 6) = \log_3 (4n + 6)$

19) $\log_{19} (-2k + 3) = \log_{19} -5k$

20) $\log_3 -3x - \log_3 6 = 3$

21) $\log_9 -2x - \log_9 10 = \log_9 28$

22) $\log_6 -4x - \log_6 8 = 1$
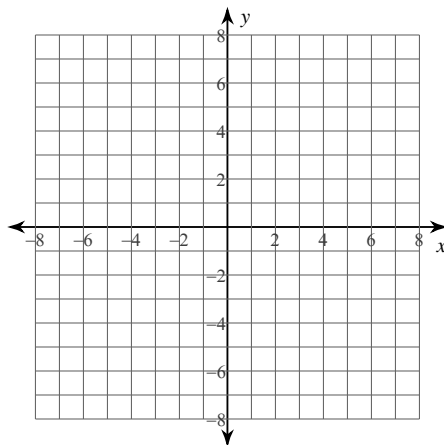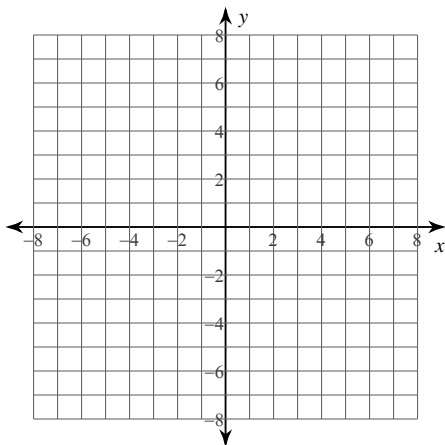
23) $\log_2 3x - \log_2 7 = 3$

24) $\log_7 x + \log_7 (x + 14) = \log_7 51$

25) $\log_4 (x - 6) - \log_4 x = 1$

Identify the domain and range of each. Then sketch the graph.

26) $f(x) = \log_4 (x + 5)$

27) $f(x) = \log_4 (x - 3) + 3$

Find the inverse of each function.

28) $y = \log_3 (x + 10)$

29) $y = \log_2 x^5$

30) $y = 6^{\frac{x}{3}}$

31) $y = 3^{\frac{x}{4}}$