Math Sheet

Name _____ Score _____ / 12 Teacher _____ Date _____

Logarithmic Equations

Use logarithm laws, solve the resulting equation, and check every candidate in the original logarithms.

1. $\log_9 y + \log_9 7 = \log_9 8$

Domain: real variables $y > 0$

2. $\log_8 z + \log_8 10 = 2$

Domain: real variables $z > 0$

3. $\log_5 2 + \log_5 \left(4 \cdot z^2\right) = \log_5 2$

Domain: real variables $4 \cdot z^2 > 0$

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4. $\log_3\left(7\cdot n^2+21\right)=\log_3\left(28\cdot n\right)$

Domain: real variables $7\cdot n^2+21>0$ $28\cdot n>0$

5. $\log_7\left(3\cdot n\right)=\log_7\left(2\cdot n+5\right)$

Domain: real variables $3\cdot n>0$ $2\cdot n+5>0$

6. $\log_4\left(9\cdot z-9\right)=\log_4\left(8\cdot z-4\right)$

Domain: real variables $9\cdot z-9>0$ $8\cdot z-4>0$

7. $\log_8\left(9\cdot n+5\right)=\log_8\left(6\cdot n-7\right)$

Domain: real variables $9\cdot n+5>0$ $6\cdot n-7>0$

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8. $\log_6 z + \log_6 10 = \log_6 10$

Domain: real variables $z > 0$

9. $\log_9 2 + \log_9 \left(2 \cdot t^2\right) = \log_9 2$

Domain: real variables $2 \cdot t^2 > 0$

10. $\log_3 \left(9 \cdot x^2 + 18\right) = \log_3 \left(-27 \cdot x\right)$

Domain: real variables $9 \cdot x^2 + 18 > 0$ $-27 \cdot x > 0$

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11. $\log_4 z + \log_4 9 = 2$

Domain: real variables $z > 0$

12. $\log_3(4 \cdot n) = \log_3(5 \cdot n + 6)$

Domain: real variables $4 \cdot n > 0$ $5 \cdot n + 6 > 0$