AP Precalc

Write your questions and thoughts here!

2.13B Exponential and Logarithmic Equations and Inequalities

2.13B Notes

Solve the following inequalities.

Ex 1: $\log(x-8)+\log 2 \leq \log(3x+4)$

First…what restrictions are there with the arguments of these logs?

So…..

Now solve and compare the intersections!

Try this one!

Ex 2: $\log_2(2x+6) > 3$

*When changing from logarithmic to exponential the argument stays on the side it started!

*What would happen if this was less than instead?

Do exponentials have restrictions on their domains?

Solve this one!

Ex 3: $3^{x+2}-4>23$

Find the inverse of each function.

Ex 4: $f(x)=3(2^{x+1})-4$

Ex 5: $g(x)=\ln(2x+3)+10$

2.13B Exponential and Logarithmic Equations and Inequalities

AP Precalculus

2.13B Practice

CALCULATOR ACTIVE. Solve each inequality.

1. $\log_4 x < 3$

2. $2^{x+3} + 5 > 37$

3. $\log 5 + \log(x-2) \geq \log(3x+8)$

4. $4(3^{2x}) - 8 \leq 316$

5. $\log_2(x+5) - 8 > -3$

6. $\ln(x+4) < \ln(x-6) + \ln 3$

Find the inverse of each function.

7. $g(x) = \ln(x - 4) + 8$

8. $f(x) = 3(2^x) + 6$

9. $h(x) = 3\log_2(2x + 1) - 3$

10. $j(x) = 2e^{x+8} - 5$

11. Use the formula for continuously compounded to solve. $A = Pe^{rt}$, where A is how much money we currently have, P is the principal (how much we started with), r is the interest rate and t, is the amount of time in years.

If Mr. Brust currently has \$250,000 in his retirement account that earns him 8.5% annual interest, how long will it take for the account to have at least \$1,000,000 if he does not add any more money into the account?

12. When considering the equation $\log(x-3)+\log(5)>\log(x+9)$, which of the following domains is our initial restriction.

(A) $(3,\infty)$

(B) $(5,\infty)$

(C) $(-9,\infty)$

(D) $(6,\infty)$

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13. When considering the equation $\log(x-3)+\log(5)>\log(x+9)$, which of the following represents the domain of all solutions to the inequality?

(A) $(3,\infty)$

(B) $(5,\infty)$

(C) $(-9,\infty)$

(D) $(6,\infty)$

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14. Express y as a function of x. A, B and C are constant, positive numbers.

$$\log(y-A)=Bx-\log C$$

(A) $y=\frac{10^{Bx}}{C}+A$

(B) $y=C+A(10^{Bx})$

(C) $y=\frac{C}{A}-10^{Bx}$

(D) $y=\frac{Bx^{10}}{C}+A$