

MATH 111 PRETEST 3

This test is designed to give an example of what types of questions may be on the test. No Calculators. Show all work for full credit.

1. Find the standard form for the equation of the following parabola.

$$f(x) = 2x^2 + 6x$$

2. For the following parabola, find standard form. Identify the vertex and x-intercepts.

$$f(x) = -4x^2 + 8x + 4$$

3. For the following parabola, find standard form. Identify the vertex and x-intercepts.

$$f(x) = x^2 + 8x - 3$$

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4. Evaluate exactly.

a. $\log_{27} 9$

b. $\log_5 125$

c. $\log_8 16$

5. Expand completely.

$$\log_2 7x^2y^3$$

6. Expand completely.

$$\ln \left(\frac{x^5y^3}{7w^6z} \right)$$

7. Condense completely.

$$2 \ln 2 + \ln x - 4 \ln y - 3 \ln z$$

8. Condense completely.

$$3(\log 2 + \log x) - 2(\log 4 + \log y)$$

9. Find the inverse function $f^{-1}(x)$. Verify your solution.

$$f(x) = \frac{2}{3}x + 5$$

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10. Find the inverse function $f^{-1}(x)$. Verify your solution.

$$f(x) = \frac{x - 4}{2x + 6}$$

11. Use long division to divide. Give your answer using the division algorithm.

$$(3x^4 + 2x^3 + 9x - 7) \div (x + 2)$$

12. Use long division to divide. Give your answer using the division algorithm.

$$(x^3 + 4) \div (x + 1)$$

13. Show that $(x + 1)$ and $(x - 3)$ are both factors of

$$f(x) = x^4 - 4x^3 - 7x^2 + 22x + 24.$$

Then find the remaining factors and write a complete factorization of $f(x)$.

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14. Solve for x .

$$\log_3 x = 2 - \log_3(x - 8)$$

15. Solve for x .

$$\log_{13} x + \log_{13}(x + 3) = \log_{13} 18$$

16. Solve for x .

$$\log(x + 1) - \log(x - 2) = 1$$

17. Solve for x .

$$\log(x - 1) - \log 6 = \log(x - 2) - \log x$$

18. Solve for x .

$$\ln x - \ln 3 = 2$$

19. Solve for x .

$$\log_4 x + \log_4(x - 4) = \log_4(3x - 10)$$

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20. Solve for x .

$$2(5^{x+3}) + 11 = 25$$

21. Solve for x .

$$2^{4x+7} - 4 = 12$$

22. Solve for x .

$$4e^{2x+5} - 7 = 21$$

23. Solve for x .

$$32(2^x) + 5 = 6$$

24. Solve for x .

$$\log_4(x + 3) = 1 - \log_4(2 - x)$$

25. Solve for x .

$$\log_3(3x) = \log_3 x + \log_3(4 - x)$$