

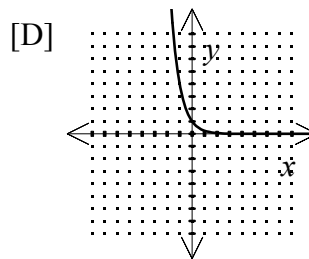
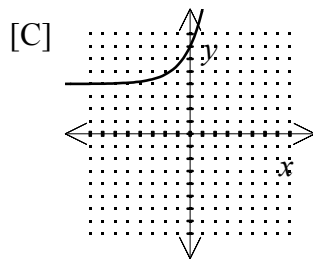
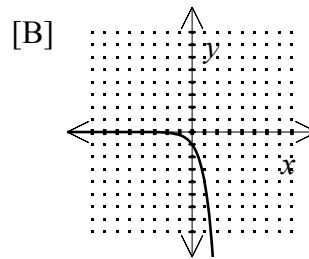
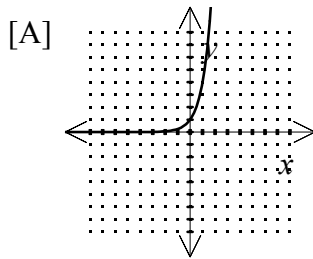
MATH 111 Sample 01 Exam 2

For each problem, show your work in the space provided.
Write your Final Answer (and the letter answer) on the Answer Sheet provided.

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1. Graph the function: $f(x) = 4^x$



2. Write the equation $5^3 = 125$ in logarithmic form.

[A] $\log_{125} 5 = 3$

[B] $\log_{\frac{1}{3}} 125 = 5$

[C] $\log_3 125 = 5$

[D] $\log_5 125 = 3$

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3. Write the equation $\log_{27} 81 = \frac{4}{3}$ in exponential form.

[A] $81^{3/4} = 27$ [B] $\left(\frac{4}{3}\right)^{27} = 81$ [C] $27^{4/3} = 81$ [D] $81^{4/3} = 27$

4. If \$100,000 is invested at 9% compounded monthly for 6 years the compounded amount is given by $A = 100,000(1.0075)^{72}$. Given that $\log 1.0075 = 0.00325$, find $\log A$. (Note that $100,000 = 10^5$)

[A] 6.0075 [B] 6.234 [C] 5.234 [D] 5.00325

Solve:

5. $\log_x \frac{25}{36} = -2$

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Solve:

6. $3x^2 + 5x = 12$ [A] $\left\{-3, \frac{4}{3}\right\}$ [B] $\left\{3, -\frac{3}{4}\right\}$ [C] $\left\{-3, \frac{3}{4}\right\}$ [D] $\left\{3, -\frac{4}{3}\right\}$

7. Solve for x : $x^4 - 6x^2 + 5 = 0$

Solve:

8. $\sqrt{t + 1} + 1 = t$

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Solve:

9. $4\sqrt{4x+2} - \sqrt{63x+34} = 0$

10. Graph: $y = -2x^5 - 2x^3 - 3$

11. Solve for x by graphing: $x^4 - 18x^2 + 17 = 0$

12. Use the Remainder Theorem to find $P(-3)$ if $P(x) = x^6 + 3x^5 + 2x^3 - 8x^2 + 28$.

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13. List all of the potential rational zeros of the polynomial function. Do not attempt to find the zeros. $f(x) = 5x^3 - 6x^2 - 7x + 10$

[A] $\pm 2, \pm 5, \pm 10, \pm 50, \pm \frac{1}{5}, \pm \frac{2}{5}$

[B] $\pm 1, \pm 2, \pm 5, \pm 10, \pm \frac{1}{5}, \pm \frac{2}{5}$

[C] $0, \pm 1, \pm 2, \pm 5, \pm \frac{1}{5}, \pm \frac{2}{5}$

[D] $\pm 2, \pm 5, \pm 10, \pm \frac{1}{5}, \pm \frac{2}{5}, \pm \frac{7}{5}$

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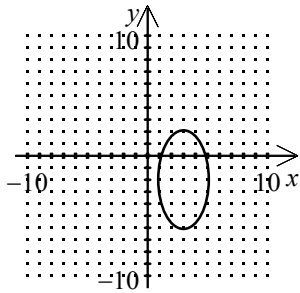
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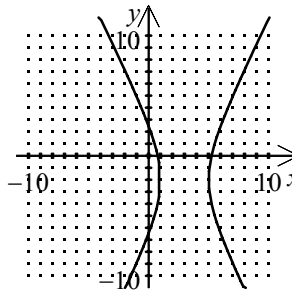
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14. Graph: $\frac{(x+3)^2}{16} - \frac{(y-2)^2}{4} = 1$

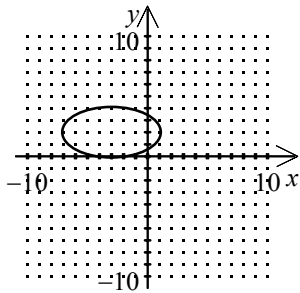
[A]



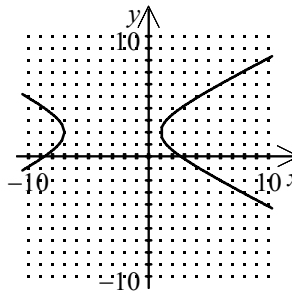
[B]



[C]



[D]



15. Find the vertex of the parabola $y = 2x^2 + 3x - 4$.

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16. Evaluate: $\begin{vmatrix} 6 & 7 \\ 3 & 4 \end{vmatrix}$ [A] 3 [B] 0 [C] -3 [D] 45

17. Solve the system: $2x + y + 2z = -1$
 $y + z = -3$
 $4x + 3y + 5z = 2$

- [A] dependent; infinitely many solutions [B] (0, 1, -1)
[C] inconsistent; no solution [D] (1, -5, 1)

18. Tasty Bakery sells three kinds of muffins: chocolate chip muffins at 30 cents each, oatmeal muffins at 35 cents each, and cranberry muffins at 40 cents each. Charles buys some of each kind and chooses three times as many cranberry muffins as chocolate chip muffins. If he spends \$6.60 on 18 muffins, how many chocolate chip muffins did he buy?

- [A] 6 [B] 8 [C] 3 [D] 9

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19. If $A = \begin{bmatrix} 5 & 2 & 3 \\ -3 & 1 & -4 \\ -4 & 5 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} -4 & 1 & -2 \\ 2 & -3 & 4 \\ 5 & -5 & -1 \end{bmatrix}$, find AB .

20. Evaluate: $\sum_{k=1}^{42} (3k + 8)$ [A] 3108 [B] 173 [C] 2709 [D] 3045

21. Find $s(15)$ for the sequence $s(n) = 4n - 4$, $n \in \{1, 2, 3, \dots\}$.

[A] 64 [B] 52 [C] 56 [D] 60

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22. Find the sum of the first 13 terms of the arithmetic sequence 7, 15, 23, 31, ...
23. Find the fourth term in the expansion of $(e - 2y)^6$.
24. Prestige Builders has a development of new homes. There are four different floor plans, three exterior colors, and an option of either a one-car or a two-car garage. How many choices are there for one home?
- [A] 18 [B] 36 [C] 12 [D] 24

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25. Account numbers for Western Oil Company consist of seven digits. If the first digit cannot be a 0, how many account numbers are possible?
- [A] 1,000,000 [B] 80,000,000 [C] 8,000,000 [D] 9,000,000

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[1] _____

[2] _____

[3] _____

[4] _____

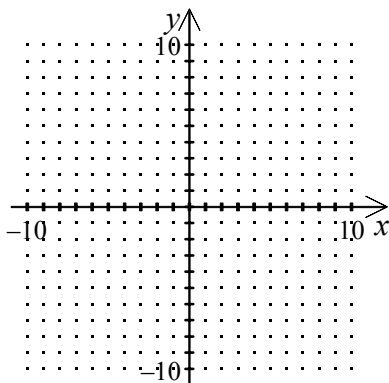
[5] _____

[6] _____

[7] _____

[8] _____

[9] _____



[10] _____

[11] _____

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[12] _____

[13] _____

[14] _____

[15] _____

[16] _____

[17] _____

[18] _____

[19] _____

[20] _____

[21] _____

[22] _____

[23] _____

[24] _____

[25] _____

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[1] [A] _____

[2] [D] _____

[3] [C] _____

[4] [C] _____

[5] $\frac{6}{5}$ _____

[6] [A] _____

[7] $\pm 1, \pm \sqrt{5}$ _____

[8] 3 _____

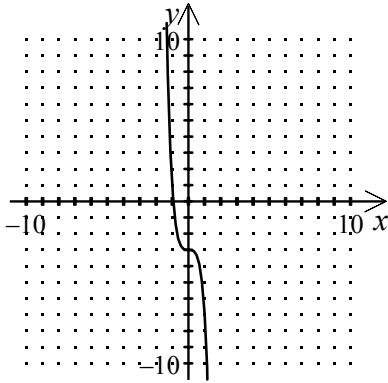
[9] $x = 2$ _____

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[10] _____

[11] $\pm 1, \pm \sqrt{17} \approx \pm 4.1$ _____

[12] -98 _____

[13] [B] _____

[14] [D] _____

[15] $\left(-\frac{3}{4}, -\frac{41}{8}\right)$ _____

[16] [A] _____

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[17] [C] _____

[18] [C] _____

[19] $\begin{bmatrix} -1 & -16 & -5 \\ -6 & 14 & 14 \\ 36 & -29 & 26 \end{bmatrix}$ _____

[20] [D] _____

[21] [C] _____

[22] 715 _____

[23] $-160e^3y^3$ _____

[24] [D] _____

[25] [D] _____