Math 107 Exam #2

November 14, 2018

Time: 1 hour and 25 minutes
Instructions: Show all work for full credit. No outside materials or calculators allowed.
Extra Space: Use the backs of each sheet for extra space. Clearly label when doing so.

Name: _____

ID #: _____

Instructor/Section: _____

"I pledge by my honor that I have abided by the NJIT Academic Integrity Code."

_____ (Signature)

Problem(s)	Score	Total

1. Evaluate. **(12 points)**:

a. $\log_4 64 =$ ___

b. $\log_{343} \frac{1}{7} =$ ___

c. $\ln 1 =$ ____

d. $\log_6 216 =$ ___

2. **Solve each system of equations (9 points)**

a.
$$-6x-7y=7$$
$$-12x-14y=2$$

2a)_____

b.
$$-8x-2y=8$$
$$7x+y=-1$$

2b)_____

c.
$$3y+18=-x$$
$$36=-7x+9y$$

2c)_____

3. Let $\log_a 6=1.5$ and $\log_a 5=1.2$. Evaluate each of the following: **(6 points)**

a) $\log_a 30$

3a) _____

b) $\log_a 25$

3b) _____

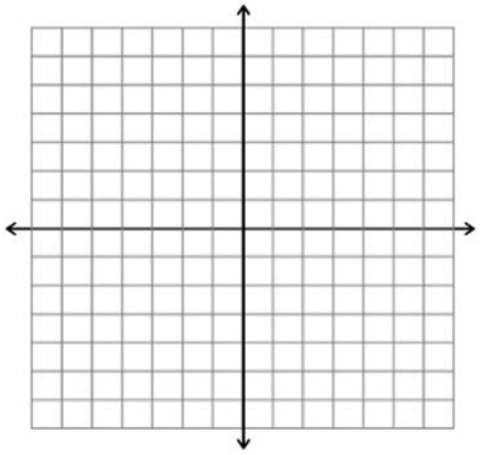
c) $\log_a \frac{150}{6}$

3c) _____

4. Convert the equation to standard form $y = a(x-h)^2 + k$ then graph the equation. Be sure to label the intercepts (if any) and the vertex. **(9 points)**

a) $y = -2x^2 - 4x - 4$

Equation:_____



5. Solve each equation:
(9 points)

5a) $6p^2 - 4p - 5 = 0$

5a)_____

5b) $4b^2 + 9 = 73$

5b)_____

5c) $x^2 = 24 - 2x$

5c)_____

6. Solve the logarithmic equations.**(8 points)**

6a) $\log_7(2x) - \log_7 10 = 1$

6b) $\log(-k+7) = \log(-5k-1)$

a)_____

b)_____

7. Amy and Jill are selling pies for a school fundraiser. Customers can buy apple pies and pumpkin pies. Amy sold 6 apple pies and 6 pumpkin pies for a total of $168. Jill sold 6 apple pies and 3pumpkin pies for a total of $123. Find the cost each of one apple pie and one pumpkin pie. **(6 points)**

7._____

8. **(12 points)**

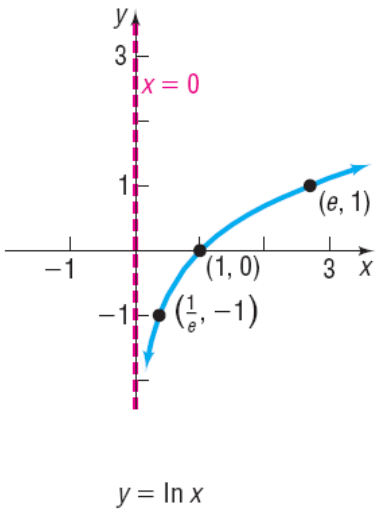
a. Divide the polynomial $\left(n^3-2n+6\right)\div\left(n-2\right)$

a._____

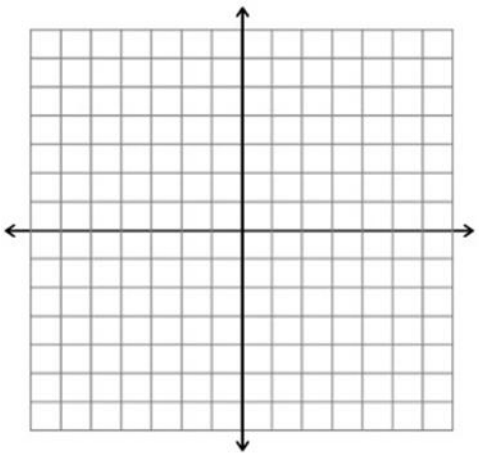
b. State whether the binomial is a factor of the given polynomial:
$\left(8b^3-38b^2-16b+30\right)\div\left(b-5\right)$

b._____

9. Given the graph of below, use transformations to sketch the graph of: $y=\ln(x+1)-4$
Be sure to identify the asymptote and the y – intercept. **(10 points)**



$y=\ln x$



10. Describe the end behavior of the function. **(4 points)**

$-x^4+5x^3-6x^2+x-1$

10._____

11. Solve. **(9 points)**

a) $2^{-2n}=64$

11a)_____

b) $27\times 3^n=243$

11b)_____

c) $5^{4-x}=\frac{1}{125}$

11c)_____

12. Expand or contract the logarithmic expression(s): **(6 points)**

a. $\log_7\left(\frac{11}{2^3}\right)^6$

a._____

b. $36\log_5 x - 6\log_5 y$

b._____