

ALEKS® Systems and Exponents Quiz #1

Beginning and Intermediate Algebra Combined / MATH 103 - Fall 2014 – 504 (Prof. Miller)

Student Name/ID:

Instructor Note:

Directions: Every problem is worth two points. One point is for trying the problem and showing your work and one point is for getting the correct answer. There are an additional five points for demonstrating the study strategy that is posted on the board and talked about at the beginning of class.

1. Order the expressions by choosing $<$, $>$, or $=$

$$\left(\frac{1}{2}\right)^{-1} \quad \square \quad \left(\frac{1}{2}\right)^{-2}$$

$$2^{-2} \quad \square \quad \left(\frac{1}{2}\right)^{-2}$$

$$2^{-1} \quad \square \quad 2^{-2}$$

2. Simplify.

$$\frac{y^6}{y^3}$$

3. Calculate.

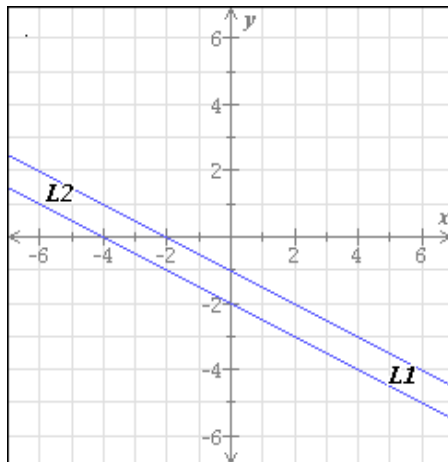
$$(3 \times 10^9)(1.3 \times 10^7)$$

Write your answer in scientific notation.

4. For each system of linear equations shown below, classify the system as "consistent dependent," "consistent independent," or "inconsistent." Then, answer the question about its solutions.

$$L1: y = \frac{-1}{2}x - 1$$

$$L2: y = \frac{-1}{2}x - 2$$



This system of equations is:

- consistent dependent - consistent independent - inconsistent

This means the system has:

- a unique solution:

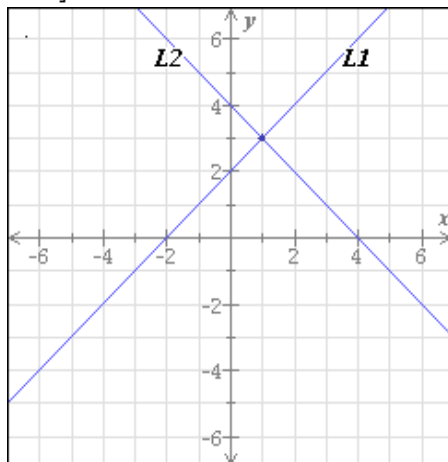
Solution: (,)

- no solution

- infinitely many solutions

$$L1: y = x + 2$$

$$L2: y = -x + 4$$



This system of equations is:

- consistent dependent - consistent independent - inconsistent

This means the system has:

- a unique solution:

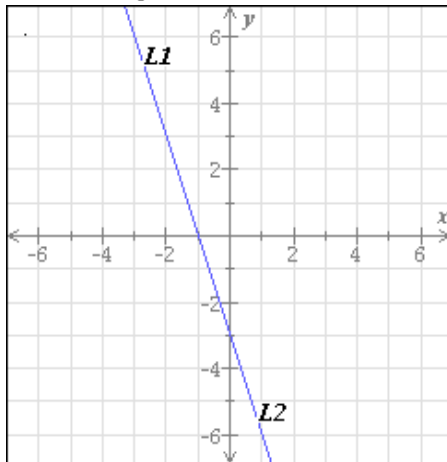
Solution: (\quad, \quad)

- no solution

- infinitely many solutions

L1: $y = -3x - 3$

L2: $3x + y = -3$



This system of equations is:

- consistent dependent - consistent independent - inconsistent

This means the system has:

- a unique solution:

Solution: (\quad, \quad)

- no solution

- infinitely many solutions

5. Simplify.

$$\left(\frac{-4a}{b^3} \right)^3$$

Write your answer without parentheses.

6. Simplify.

$$(6u)^2$$

Write your answer without parentheses.

7. Simplify.

$$\frac{y^4 x^6}{y^7 x}$$

8. The sum of two numbers is 42 One number is 2 times as large as the other. What are the numbers?

9. Simplify.

$$2vx^{-2} \cdot 7v^{-1} \cdot 4u^7 u^{-1} x^{-4}$$

Use only positive exponents in your answer.

10. Hong bought a desktop computer and a laptop computer. Before finance charges, the laptop cost \$400 less than the desktop. He paid for the computers using two different financing plans. For the desktop the interest rate was 7.5% per year, and for the laptop it was 8% per year. The total finance charges for one year were \$371 How much did each computer cost before finance charges?

11. Solve the following system of equations.

$$7x - 2y = -9$$

$$4x - 5y = -9$$

12. Simplify.

$$\left(-3w^4x^{-2}\right)^2$$

Write your answer using only positive exponents.

13. Write 0.0005941 in scientific notation.

14. Simplify.

$$\left(w^4\right)^3$$

Write your answer without parentheses.

15. Use substitution to solve the system.

$$\begin{aligned}y &= 3x - 4 \\ 4x + 3y &= 27\end{aligned}$$

$$x = \boxed{}$$

$$y = \boxed{}$$

Systems and Exponents Quiz #1 Answers for class Beginning and Intermediate Algebra Combined / MATH 103 - Fall 2014 – 504

1. $\left(\frac{1}{2}\right)^{-1} < \left(\frac{1}{2}\right)^{-2}$

$$2^{-2} < \left(\frac{1}{2}\right)^{-2}$$

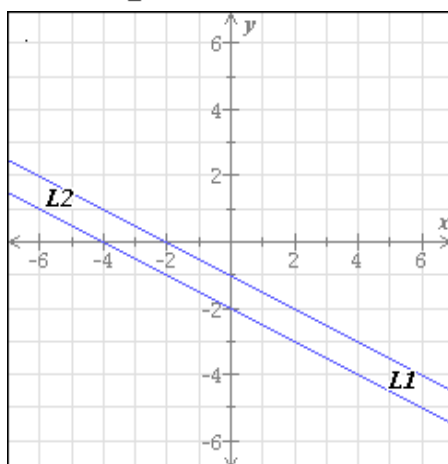
$$2^{-1} > 2^{-2}$$

2. y^3

3. 3.9×10^{16}

4. L1: $y = \frac{-1}{2}x - 1$

L2: $y = \frac{-1}{2}x - 2$



This system of equations is:

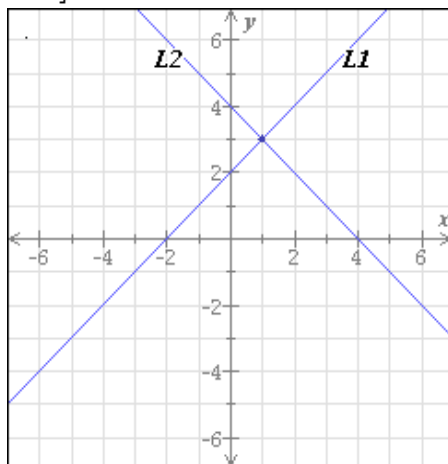
- inconsistent

This means the system has:

- no solution

L1: $y = x + 2$

L2: $y = -x + 4$



This system of equations is:

- consistent independent

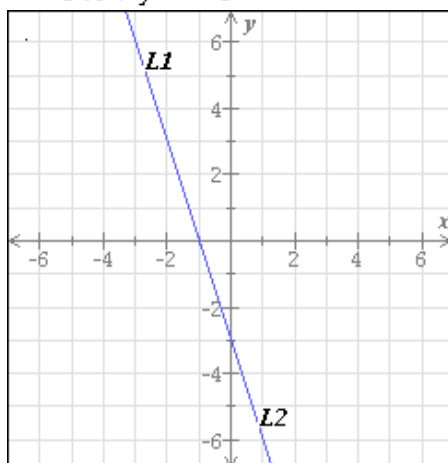
This means the system has:

- a unique solution:

Solution: $(1, 3)$

$$L1: y = -3x - 3$$

$$L2: 3x + y = -3$$



This system of equations is:

- consistent dependent

This means the system has:

- infinitely many solutions

5.
$$-\frac{64a^3}{b^9}$$

6.
$$36u^2$$

7.
$$\frac{x^5}{y^3}$$

8. Larger number: 28
Smaller number: 14

9.
$$\frac{56u^6}{x^6}$$

10. Desktop: \$2600
Laptop: \$2200

11.
$$x = -1$$

$$y = 1$$

12. $\frac{9w^8}{x^4}$

13. 5.941×10^{-4}

14. w^{12}

15. $x = 3$
 $y = 5$