

# ALEKS<sup>®</sup> MAT96 Final Pre-test #1

Pre-Algebra and Introductory Algebra / MAT 96 Fall 1, 2016 - 3084 (Prof. Sze)

Student Name/ID:
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1. Translate the sentence into an equation.

*Two more than the quotient of a number and 4 is equal to 6.*

Use the variable  $c$  for the unknown number.

2. Solve the following system of equations.

$$8x - 5y = -8$$

$$-4x + 9y = 4$$

3. Solve for  $B$ .

$$A = 8B + C$$

4. Solve for  $x$ .

$$6x - 16 = -8(x + 9)$$

Simplify your answer as much as possible.

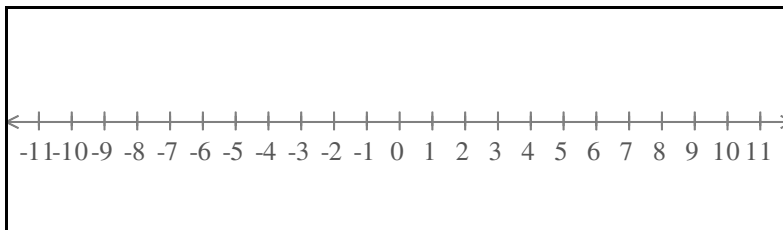
5. Solve the inequality for  $w$ .

$$5w - 6 < 9w - 30$$

Simplify your answer as much as possible.

6. Graph the inequality below on the number line.

$$x > 0$$



7. Find the  $y$ -intercept and the slope of the line.

$$4x + y = -1$$

Write your answers in simplest form.

8. Write equations for the vertical and horizontal lines passing through the point  $(4, -4)$ .

vertical line:

horizontal line:

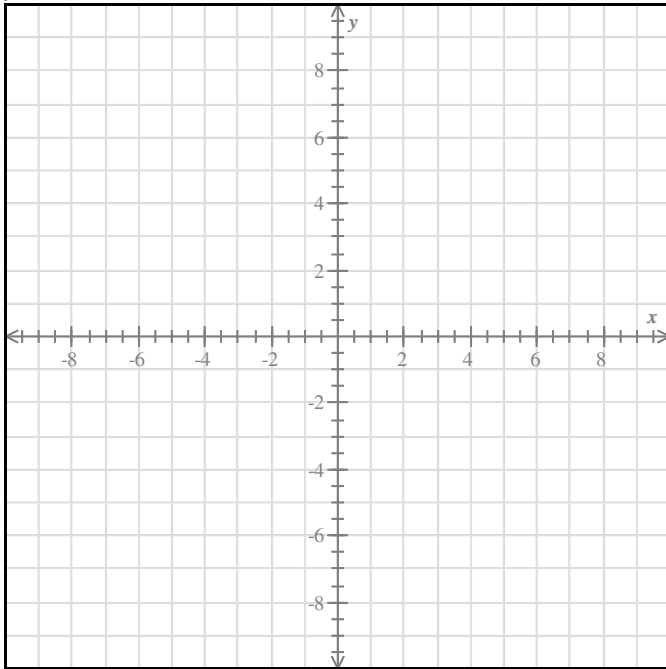
9. The equation of a line is given below.

$$6x + 7y = 21$$

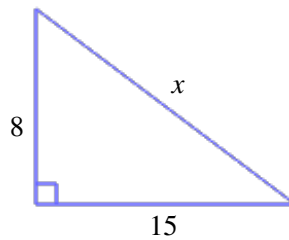
Find the  $x$ -intercept and the  $y$ -intercept.  
Then use them to graph the line.

$x$ -intercept: \_\_\_\_\_

$y$ -intercept: \_\_\_\_\_



10. For the following right triangle, find the side length  $x$ .



11. Solve for  $y$ .

$$\frac{y}{6} + \frac{y}{9} = \frac{5}{6}$$

Simplify your answer as much as possible.

12. Simplify.

$$2\sqrt{28} + \sqrt{63} + 16\sqrt{7}$$

13. Multiply.

$$5\sqrt{3}(\sqrt{6} + 3)$$

Simplify your answer as much as possible.

14. Solve for  $y$ .

$$3y^2 + 21y = 0$$

15. Solve for  $u$ .

$$5u^2 = -16u - 3$$

16. Simplify.

$$\left( \frac{x^3 y^4}{x^5 y^2} \right)^3$$

Write your answer using only positive exponents.

17. Simplify.

$$(7xy^2 + x^2y^2 - 6) - (5x^2y - 3)$$

18. Multiply.

$$(6x^2 + x - 4)(5x - 7)$$

Simplify your answer.

19. Divide.

$$(-14z^3y^7 + 15zy^7) \div (-2z^2y^3)$$

Simplify your answer as much as possible.

20. Factor by grouping.

$$pn - mn - 6p + 6m$$

21. Factor completely.

$$5u^2 + 15u - 90$$

22. Factor by grouping (sometimes called the *ac*-method).

$$3x^2 - 5x - 8$$

First, choose a form with appropriate signs.

Then, fill in the blanks with numbers to be used for grouping.

Finally, show the factorization.

<b>Form:</b>
<input type="radio"/> $3x^2 + \underline{\quad}x + \underline{\quad}x - 8$
<input type="radio"/> $3x^2 + \underline{\quad}x - \underline{\quad}x - 8$
<input type="radio"/> $3x^2 - \underline{\quad}x + \underline{\quad}x - 8$
<input type="radio"/> $3x^2 - \underline{\quad}x - \underline{\quad}x - 8$
<b>Factorization:</b>
<hr/>

23. Factor completely.

$$50u^4 - 32u^2$$

24. Simplify.

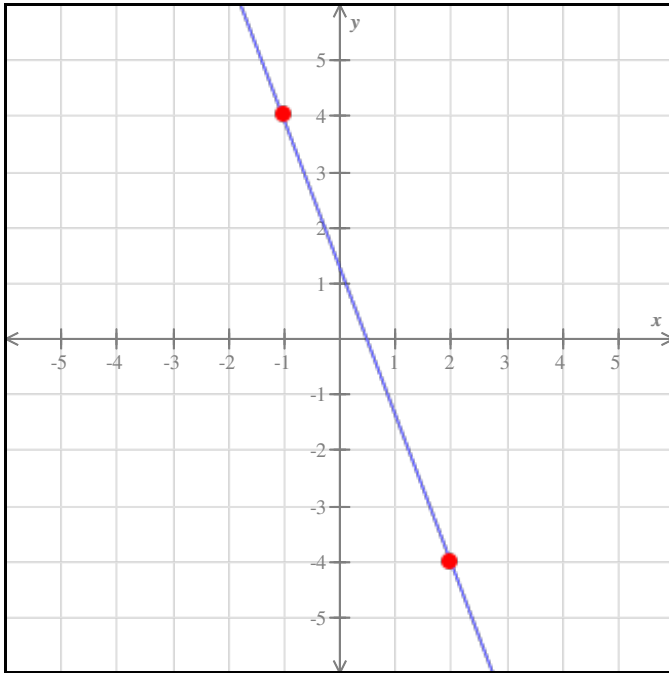
$$\frac{y^5 z^2}{y^4 z^6}$$

25. Find an equation for the line that passes through the points  $(5, -2)$  and  $(-1, 1)$ .

26. Evaluate the expression when  $c = 2$  and  $x = -5$ .

$$-9c + x$$

27. Find the slope of the line graphed below.



28. Simplify.

$$\frac{30n^{-4}m^{-7}}{6m^{-2}n^5}$$

Write your answer using only positive exponents.

29. A line passes through the point  $(-8, 3)$  and has a slope of  $-2$ .

Write an equation in slope-intercept form for this line.

30. Multiply.

$$\sqrt{6}(9\sqrt{2} + \sqrt{7})$$

Simplify your answer as much as possible.



# MAT96 Final Pre-test #1 Answers for class MAT 96 Fall 1, 2016 - 3084

1.  $\frac{c}{4} + 2 = 6$

2.

$$x = -1$$

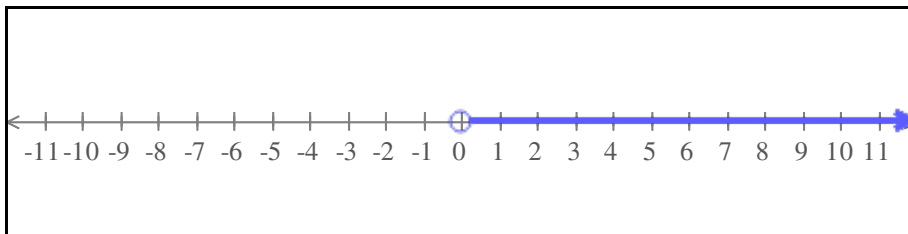
$$y = 0$$

3.  $B = \frac{A - C}{8}$

4.  $x = -4$

5.  $w > 6$

6.



7. y-intercept:  $-1$

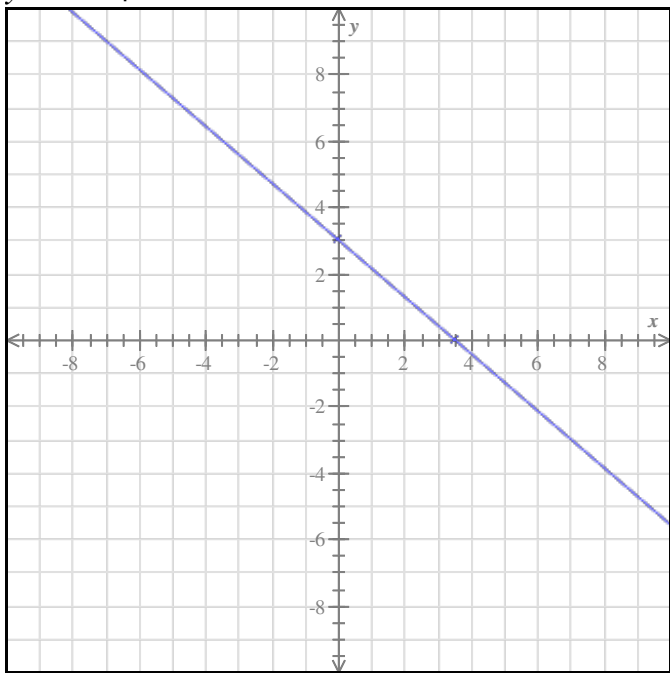
slope:  $-4$

8. vertical line:  $x = 4$

horizontal line:  $y = -4$

9.  $x$ -intercept:  $\frac{7}{2}$

$y$ -intercept: 3



10. 17

11.  $y = 3$

12.  $23\sqrt{7}$

13.  $15\sqrt{2} + 15\sqrt{3}$

14.  $y = 0, -7$

15.  $-\frac{1}{5}, -3$

16.  $\frac{y^6}{x}$

17.  $7xy^2 + x^2y^2 - 3 - 5x^2y$

18.  $30x^3 - 37x^2 - 27x + 28$

19.  $7zy^4 - \frac{15y^4}{2z}$

20.  $(p - m)(n - 6)$

21.  $5(u - 3)(u + 6)$

22.

<b>Form:</b>
<input type="radio"/> $3x^2 + \_\_\_x + \_\_\_x - 8$
<input type="radio"/> $3x^2 + \_\_\_x - \_\_\_x - 8$
<input checked="" type="radio"/> $3x^2 - 8x + 3x - 8$
<input type="radio"/> $3x^2 - \_\_\_x - \_\_\_x - 8$
<b>Factorization:</b>
$(3x - 8)(x + 1)$

23.  $2u^2(5u + 4)(5u - 4)$

24.  $\frac{y}{z^4}$

25.  $y = -\frac{1}{2}x + \frac{1}{2}$

26.  $-23$

27.  $-\frac{8}{3}$

28.  $\frac{5}{n^9 m^5}$

29.  $y = -2x - 13$

30.  $18\sqrt{3} + \sqrt{42}$