

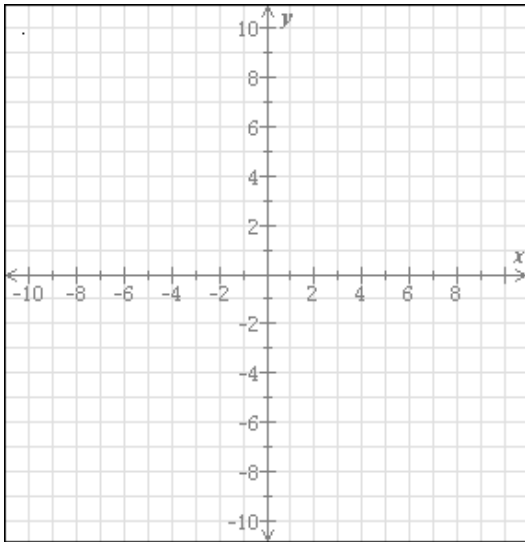
ALEKS® 103 Practice Test

Beginning and Intermediate Algebra Combined / Math 103 – (Prof. Vasan)

Student Name/ID:

1. Graph the line.

$$y = -\frac{1}{4}x + 5$$



2. Find the slope and the y -intercept of the line.

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

Write your answers in simplest form.

3. Consider the line $y = \frac{3}{4}x + 7$

(a) Find the equation of the line that is parallel to this line and passes through the point $(-8, 5)$

(b) Find the equation of the line that is perpendicular to this line and passes through the point $(-8, 5)$

4. Consider the line $y = -\frac{5}{3}x + 5$

(a) Find the equation of the line that is perpendicular to this line and passes through the point $(-5, -4)$

(b) Find the equation of the line that is parallel to this line and passes through the point $(-5, -4)$

5. A motorboat takes 3 hours to travel 144 km going upstream. The return trip takes 2 hours going downstream. What is the rate of the boat in still water and what is the rate of the current?

Rate of the boat in still water: km/h

Rate of the current: km/h

6. Jose bought a desktop computer and a laptop computer. Before finance charges, the laptop cost \$450 less than the desktop. He paid for the computers using two different financing plans. For the desktop the interest rate was 6.5% per year, and for the laptop it was 9% per year. The total finance charges for one year were \$409. How much did each computer cost before finance charges?

7. Simplify.

$$\left(-2x^2y^2z^4\right)\left(-2x^3y^3z\right)^2$$

8. Simplify.

$$\left(-2a^4b^{-6}\right)^2$$

Write your answer using only positive exponents.

9. Write 0.000973 in scientific notation.

10. Multiply.

$$(y+1)(y-6)$$

Simplify your answer.

11. Divide.

$$\left(-15v^4x^2 + 4v^3x\right) \div \left(-2v^4x^2\right)$$

Simplify your answer as much as possible.

12. Divide.

$$\left(11x - 6x^3 + 3 - 15x^4 - 4x^2\right) \div \left(-3x^2 + 1\right)$$

Write your answer in the following form: Quotient + $\frac{\text{Remainder}}{-3x^2 + 1}$

$$\frac{11x - 6x^3 + 3 - 15x^4 - 4x^2}{-3x^2 + 1} = \boxed{} + \frac{\boxed{}}{-3x^2 + 1}$$

13. Factor $9y^2 - 15y^3$

14. Factor by grouping.

$$uy - 14u + 7u^2 - 2y$$

15. Solve for x in the equation below.
Round your answer to the nearest hundredth.
Do not round any intermediate computations.

$$12^{x+9} = 7$$

16. Solve for x

$$2^{x^2+18x-18} = 32^{3x-4}$$

17. Fill in the missing values to make the equations true.

(a) $\log_2 5 + \log_2 7 = \log_2 \square$

(b) $\log_7 \square - \log_7 11 = \log_7 \frac{3}{11}$

(c) $\log_5 81 = \square \log_5 3$

18. Consider the equation

$$\log_4 14^{x+3} = 3$$

Find the value of x . Round your answer to 3 decimal places.

19. Evaluate.

$$\log_3 81$$

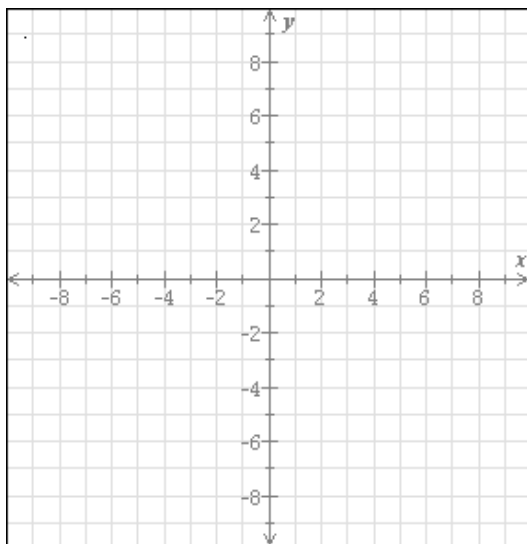
20. Solve for x

$$\log_8 x = -2$$

Simplify your answer as much as possible.

21. Graph the parabola.

$$y = (x - 1)^2 - 3$$



22. Solve $(y + 6)^2 - 72 = 0$ where y is a real number.
Simplify your answer as much as possible.

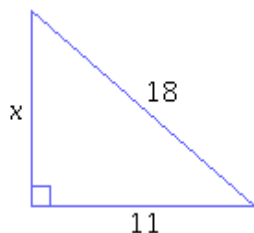
23. Rationalize the denominator and simplify.

$$\frac{\sqrt{11} - \sqrt{3}}{\sqrt{11} + \sqrt{3}}$$

24. Solve for u where u is a real number.

$$\sqrt{40 - 6u} = u - 4$$

25. For the following right triangle, find the side length x . Round your answer to the nearest hundredth.



26. Write the following expression in simplified radical form.

$$\sqrt[3]{32x^8w^{12}}$$

Assume that all of the variables in the expression represent positive real numbers.

27. How many machines will be needed to complete a task in 9 days, given that 6 machines can complete the same task in 6 days?

