

M105 Intermediate Algebra Practice Midterm

The following problems were chosen to emulate the problems on the Midterm. You should download this Practice Midterm and work the problems on paper. When you have completed the problems, download the solutions that I have provided and check your answers. Post questions to the FORUM on for Quizzes and Tests. Happy studying!

1. Solve the following absolute value inequality. Give the solution as an inequality only.

$$|x + 5| < 9$$

2. Solve the following absolute value inequality. Give the solution as an inequality only.

$$|2x - 9| \geq 5$$

3. Write an equivalent inequality to $-2 \leq x \leq 2$, containing an absolute value.

4. The amount of gas left in my gas tank, g , is given by the linear function

$$g(m) = 11 - \left(\frac{m}{50}\right)$$

where “ m ” represents the number of miles driven since I filled my gas tank. How many gallons of gas remain when I’ve driven 225 miles. If your answer isn’t an integer give it as a decimal rounded to the nearest 10^{th} (1 decimal) if necessary.

5. For certain people suffering from a severe allergic reaction 250 micrograms of the drug epinephrine is sometimes given. The number of micrograms of epinephrine left in the blood, “ t ” minutes after it is given can be described by the function

$$N(t) = -10t^2 + 100t$$

Find the time it takes for only 210 micrograms to remain in the blood. Give the longest amount of time as your answer.

6. Use interval notation to write the solution for:

$$\frac{x}{14} - \frac{5x + 2}{49} \geq \frac{3x - 4}{7}$$

7. Simplify: $\frac{-\frac{9}{4}}{-\frac{15}{18}}$

8. If $P(x) = 2x - 3$ & $Q(x) = 2x + 3$, find $P(x) \cdot Q(x)$

9. If $R(x) = 0.5x - 1$, find $[R(x)]^2$

10. The area of the recreation room is 900 square feet. If the length is 5 more than twice the width, **find the dimensions** of the room. Assume the room is rectangular.

11. Simplify: $1 + \frac{2}{x}$

 $1 - \frac{4}{x^2}$

12. Simplify: $\frac{|5| - |-2 + 17|}{2}$
13. Divide: $(2x^2 + 5x - 1) \div (2x - 1)$
14. Divide: $(x^3 - 13x - 7x^2 + 3) \div (x - 1)$
15. Simplify: $20(5xy - 2) - (30xy - 28)$
16. Solve: $|^{(2x-1)}_3| = |-4|$
17. Solve: $5 - 2|3x - 4| = -5$
18. Find the equation of the line through the point (3, -2) that is perpendicular to $3x - 6y = 5$. Give the equation in standard form.
19. Multiply: $[5x - (3y + 6)][5x + (3y + 6)]$
20. Find $f(t)$, when $f(x) = 6x - 9$
21. Find $f(-2)$, when $f(x) = -3x^2 - 5x + 3$
22. Find the value of "x" for which $f(x) = 9$ when $f(x) = 2x - 1$.
23. Kahla paddled at a constant speed for 4 hours downstream with a current speed that is 6 km/hr to reach her campsite. On her return trip, against the same current and maintaining her constant speed of paddling, the return trip took 10 hours. Find Kahla's constant paddling speed.