

Student: _____

Instructor: Alfredo Alvarez

Assignment: Math

Date: _____

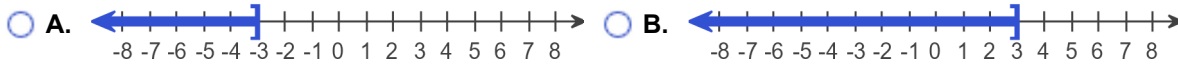
Course: Math 0410 / 0320 Alvarez

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1. Solve the inequality. Graph the solution set and write it in interval notation.

$$-7x \leq 21$$

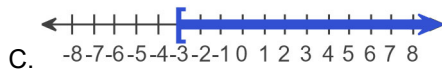
Choose the correct graph below.



The solution to the inequality $-7x \leq 21$ is .

(Type your answer in interval notation.)

Answers



$[-3, \infty)$

2. Find $h(-1)$, $h(0)$, and $h(5)$ for the following function.

$$h(x) = 7x^2 - 4$$

$h(-1) =$ (Simplify your answer.)

$h(0) =$ (Simplify your answer.)

$h(5) =$ (Simplify your answer.)

Answers 3

-4

171

3. Solve the system of equations by the addition method.

$$\begin{cases} 4x + 5y = 33 \\ 5x - 5y = -15 \end{cases}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The solution is _____. (Simplify your answer. Type an ordered pair.)
- B. There are infinitely many solutions; $\{(x,y)|4x + 5y = 33\}$ or $\{(x,y)|5x - 5y = -15\}$.
- C. There is no solution; $\{\}$ or \emptyset .

Answer: A. The solution is . (Simplify your answer. Type an ordered pair.)

4. Solve the system of equations by the addition method.

$$\begin{cases} x + 3y = -1 \\ 5x + 2y = -18 \end{cases}$$

Select the correct choice below and, if necessary, fill in the answer box within your choice.

- A. The solution is _____. (Simplify your answer. Type an ordered pair.)
- B. There are infinitely many solutions; $\{(x,y)|x + 3y = -1\}$ or $\{(x,y)|5x + 2y = -18\}$.
- C. There is no solution; $\{\}$ or \emptyset .

Answer: A. The solution is . (Simplify your answer. Type an ordered pair.)

5. Divide using synthetic division.

$$(6x^2 + 11x + 8) \div (x + 1)$$

$$(6x^2 + 11x + 8) \div (x + 1) = \text{_____}$$

Answer: $6x + 5 + \frac{3}{x + 1}$

6. Factor out the greatest common factor from the polynomial.

$$6x + 12$$

$$6x + 12 = \text{_____} \text{ (Type your answer in factored form.)}$$

Answer: $6(x + 2)$

7. Factor the trinomial completely.

$$x^2 - 10x + 9$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. $x^2 - 10x + 9 =$ _____ (Type your answer in factored form.)
- B. The polynomial is prime.

Answer: A. $x^2 - 10x + 9 =$ (Type your answer in factored form.)

8. Factor the trinomial completely.

$$3t - 40 + t^2$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. $3t - 40 + t^2 =$ _____ (Factor completely.)
- B. The polynomial is prime.

Answer: A. $3t - 40 + t^2 =$ (Factor completely.)

9. Factor the trinomial by grouping.

$$8y^2 - 22y + 14$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. $8y^2 - 22y + 14 =$ _____ (Factor completely.)
- B. The polynomial is prime.

Answer: A. $8y^2 - 22y + 14 =$ (Factor completely.)

10. Factor the trinomial by grouping.

$$9x^3 - 3x^2 - 30x$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. $9x^3 - 3x^2 - 30x =$ _____ (Factor completely.)
- B. The polynomial is prime.

Answer: A. $9x^3 - 3x^2 - 30x =$ (Factor completely.)

11. Factor the following binomial completely.

$$81x^2 - 49y^2$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. $81x^2 - 49y^2 =$ _____ (Factor completely.)
- B. The polynomial is prime.

Answer: A. $81x^2 - 49y^2 =$ (Factor completely.)

12. Solve the equation.

$$(7x + 8)(2x - 7) = 0$$

$x =$

(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: $-\frac{8}{7}, \frac{7}{2}$

13. Solve.

$$x^2 + 2x - 15 = 0$$

$x =$

(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: $-5, 3$

14. Solve the equation.

$$x^3 - 12x^2 + 27x = 0$$

$x =$

(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: $0, 3, 9$

15. Solve.

$$6x^2 + x - 7 = 0$$

$x =$

(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: $-\frac{7}{6}, 1$

16. Simplify the expression.

$$\frac{-9a + 9b}{a - b}$$

Select the correct choice below and fill in any answer boxes in your choice.

- A. $\frac{-9a + 9b}{a - b} =$ _____ (Simplify your answer.)
- B. The expression cannot be simplified.

Answer: A. $\frac{-9a + 9b}{a - b} =$ (Simplify your answer.)

17. Find the product and simplify if possible.

$$\frac{x}{5x - 40} \cdot \frac{x^2 - 8x}{9}$$

$$\frac{x}{5x - 40} \cdot \frac{x^2 - 8x}{9} =$$

(Simplify your answer. Use integers or fractions for any numbers in the expression.)

Answer: $\frac{x^2}{45}$

18. Find the quotient and simplify.

$$\frac{x^2 + 11x + 24}{x - 5} \div \frac{x^2 - 6x - 27}{x - 5}$$

$$\frac{x^2 + 11x + 24}{x - 5} \div \frac{x^2 - 6x - 27}{x - 5} =$$
 (Type your answer in factored form.)

Answer: $\frac{x + 8}{x - 9}$

19. Subtract the rational expressions and simplify if possible.

$$\frac{4x}{2x - 7} - \frac{14}{2x - 7}$$

$$\frac{4x}{2x - 7} - \frac{14}{2x - 7} =$$
 (Simplify your answer.)

Answer: 2

20. Add. Simplify the result if possible.

$$\frac{6}{4+y} + \frac{y+5}{4+y}$$

$$\frac{6}{4+y} + \frac{y+5}{4+y} = \boxed{} \text{ (Simplify your answer.)}$$

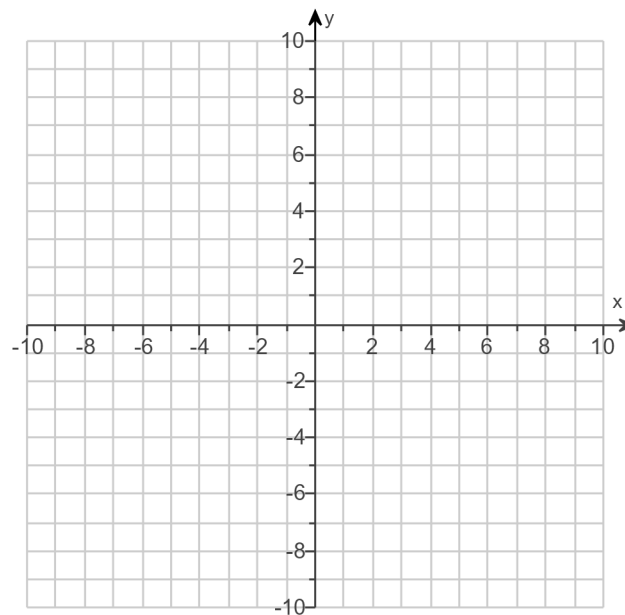
$$\text{Answer: } \frac{y+11}{4+y}$$

21.

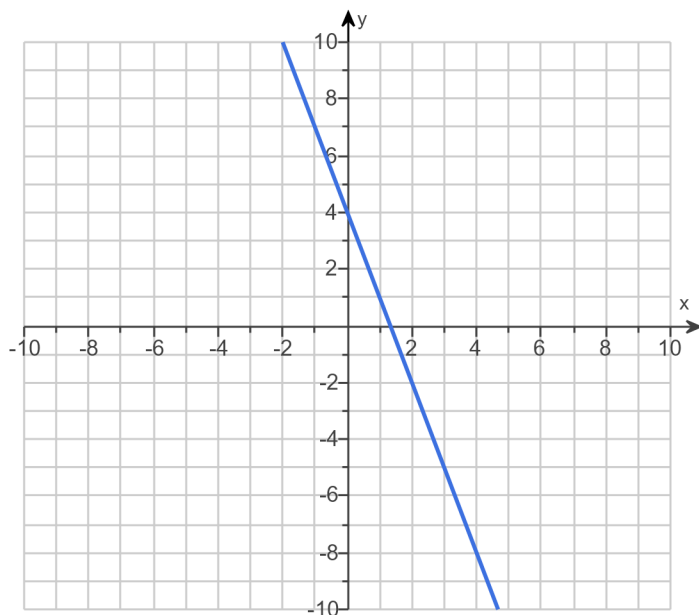
Graph the linear equation.

$$f(x) = -3x + 4$$

Use the graphing tool to graph the linear equation.



Answer:



22. Solve the absolute value equation.

$$|2x - 1| = 5$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The solution set is $\{\underline{\hspace{2cm}}\}$.
(Type an integer or a simplified fraction. Use a comma to separate answers as needed.)
- B. The solution set is \emptyset .

Answer: A. The solution set is $\{ \boxed{3, -2} \}$.

(Type an integer or a simplified fraction. Use a comma to separate answers as needed.)

23. Solve the inequality. Then graph the solution set.

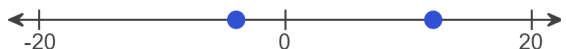
$$|x - 4| < 8$$

Select the correct choice below and, if necessary, fill in the answer box within your choice.

- A. The solution is one or more intervals. The solution is .
(Simplify your answer. Type your answer in interval notation. Use integers or fractions for any numbers in the expression.)
- B. There are only one or two solutions. The solution set is $\{\underline{\hspace{2cm}}\}$.
(Type an integer or a fraction. Use a comma to separate answers as needed.)
- C. There is no solution.

Choose the correct graph below.

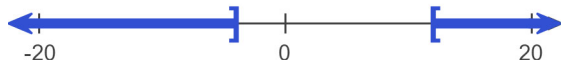
A.



B.



C.



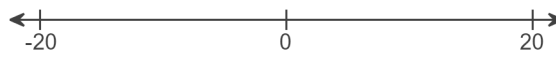
D.



E.

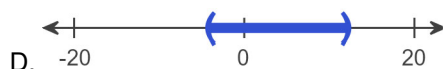


F.



Answers A. The solution is one or more intervals. The solution is $\boxed{(-4, 12)}$.

(Simplify your answer. Type your answer in interval notation. Use integers or fractions for any numbers in the expression.)



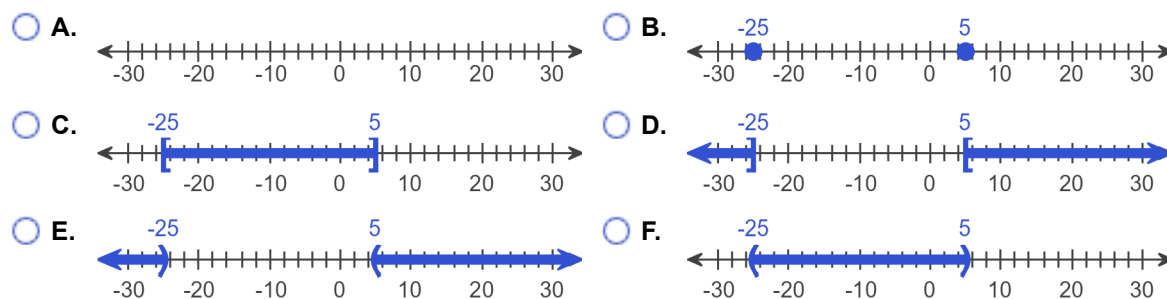
24. Solve the inequality. Graph the solution set.

$$|x + 10| \geq 15$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

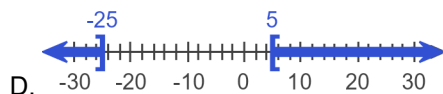
- A. The solution is one or more intervals. The solution is _____.
(Type your answer in interval notation. Simplify your answer. Use integers or fractions for any numbers in the expression.)
- B. There are only one or two solutions. The solution set is { _____ }.
(Use a comma to separate answers as needed.)
- C. There is no solution.

Choose the correct graph below.



Answers A. The solution is one or more intervals. The solution is $(-\infty, -25] \cup [5, \infty)$.

(Type your answer in interval notation. Simplify your answer. Use integers or fractions for any numbers in the expression.)



25. Simplify the radical. Assume that all variables represent positive real numbers.

$$\sqrt{16a^2b^{26}}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. $\sqrt{16a^2b^{26}} =$ _____
- B. The square root is not a real number.

Answer: A. $\sqrt{16a^2b^{26}} =$

26. Use radical notation to rewrite the expression. Simplify if possible.

$$625^{3/4}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. $625^{3/4} =$ _____
(Simplify your answer. Type an exact answer, using radicals as needed.)
- B. The answer is not a real number.

Answer: A. $625^{3/4} =$ (Simplify your answer. Type an exact answer, using radicals as needed.)

27. Simplify by factoring.

$$\sqrt{20}$$

Answer: $2\sqrt{5}$

$\sqrt{20} =$
(Type an exact answer, using radicals as needed.)

28. Solve.

$$\sqrt{x-9} = 3$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The solution(s) is(are) $x =$ _____.
(Use a comma to separate answers as needed.)
- B. The solution set is \emptyset .

Answer: A. The solution(s) is(are) $x =$. (Use a comma to separate answers as needed.)

29. Subtract.

$$(5 + 6i) - (9 - 5i)$$

$$(5 + 6i) - (9 - 5i) =$$

(Simplify your answer. Type your answer in the form $a + bi$.)

Answer: $-4 + 11i$

30. Multiply.

$$(9 + 6i)(8 + i)$$

$$(9 + 6i)(8 + i) =$$

(Simplify your answer. Type your answer in the form $a + bi$.)

Answer: $66 + 57i$

31. Perform the indicated operation.

$$\frac{8 - 7i}{8 + i}$$

$$\frac{8 - 7i}{8 + i} = \boxed{}$$

(Type your answer in the form $a + bi$. Use integers or fractions for any numbers in the expression.)

Answer: $\frac{57}{65} - \frac{64}{65}i$

32. Use the square root property to solve the equation. The equation has real number solutions.

$$(x + 7)^2 = 36$$

$$x = \boxed{}$$

(Simplify your answer. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

Answer: $-1, -13$

33. Use the quadratic formula to solve the equation.

$$m^2 - 5m + 4 = 0$$

$$m = \boxed{}$$

(Simplify your answer. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

Answer: $4, 1$

34. Use the quadratic formula to solve the equation.

$$x^2 + 4x + 8 = 0$$

The solution(s) is/are $x = \boxed{}$.

(Simplify your answer. Type an exact answer, using radicals and i as needed. Use a comma to separate answers as needed.)

Answer: $-2 + 2i, -2 - 2i$

35. Find the vertex of the graph of the following quadratic function.

$$f(x) = -2x^2 - 8x + 3$$

The vertex is $\boxed{}$.

(Type an ordered pair.)

Answer: $(-2, 11)$