

Math 71A Review

1. Find the solution set for the following equation.

$$|4x - 9| = |2x + 1|$$

2. Find the solution set for the following equation.

$$3x^2 - 3 = 7(1 - x) - 4$$

3. Find the solution set for the following equation.

$$(x + 3)(x + 2) = 2$$

4. Find the solution set for the following equation.

$$\frac{4x}{x+3} - \frac{12}{x-3} = \frac{4x^2+36}{x^2-9}$$

5. Find the solution set for the following equation.

$$\frac{3x}{x+1} + \frac{4}{x-2} = 3$$

6. Solve the formula for p : $\frac{1}{p} + \frac{1}{q} = \frac{1}{f}$

7. Find the domain of $f(x) = \frac{3x}{x^2+10x-24}$ and write your answer using interval notation.

8. Given that $f(x) = 2x^2 - 3x$, find $f(a + h) - f(a)$ and simplify.

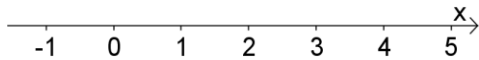
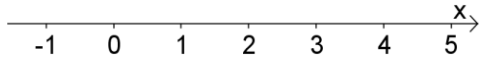
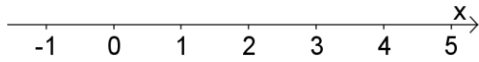
9. Find and graph the solution set of the following inequality. Write your solution using interval notation.

$$\frac{x+2}{3} \geq \frac{x-1}{4} + \frac{1}{3}$$

_____ $x \rightarrow$

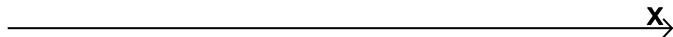
10. Find and graph the solution set of the following compound inequality. Write your solution using interval notation.

$$2x + 3 < 5 \text{ or } 15 - 2x \leq 9$$



11. Find and graph the solution set of the following inequality. Write your solution using interval notation.

$$|2x - 3| \leq 4$$



12. Write the slope-intercept form of the equation for the line passing through $(3, -5)$ and perpendicular to the line whose equation is $-3x + y = 1$.

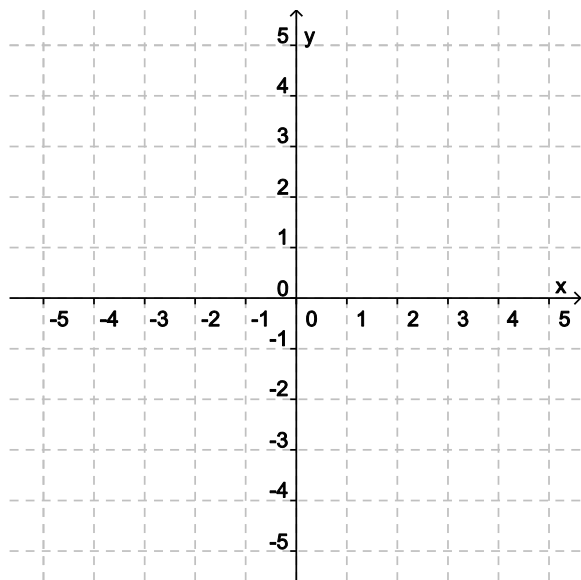
13. Solve the system. Write the solution as a set.

$$x + y + z = 5$$

$$2x + z = 8$$

$$3y + 2z = 5$$

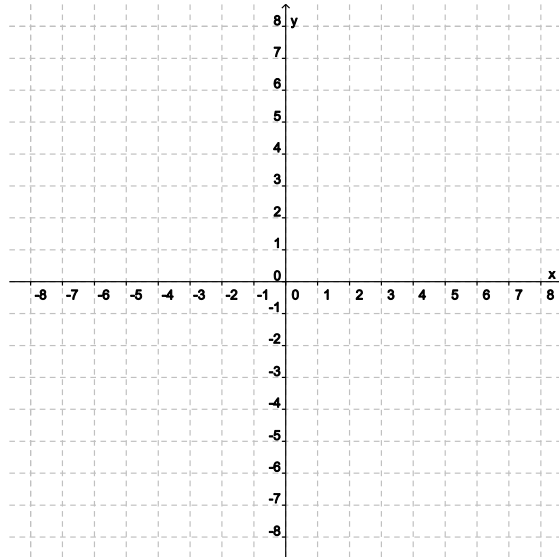
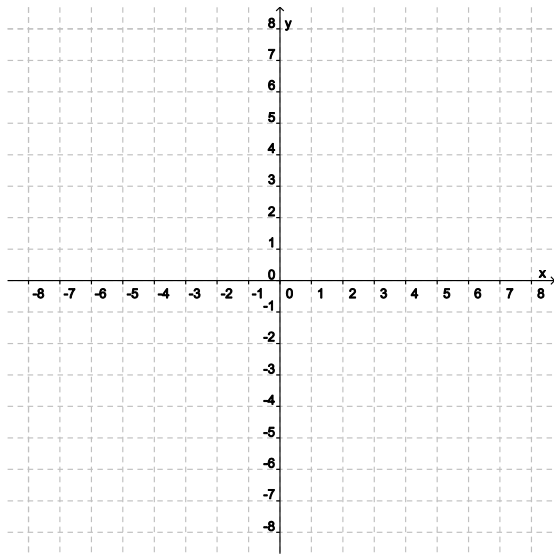
14. Graph the equation $y = |x| + 2$. Be sure to plot the points on the graph at $x = -2, -1, 0, 1,$ and 2 .



15. Graph the solution set of the following system of inequalities:

$$2x - y \leq 4$$

$$3x + 2y \geq -6$$



16. Factor completely, or state that the polynomial is prime.

$$6x^7 + 48x^4$$

17. Factor completely, or state that the polynomial is prime.

$$8x^3y^4z - 6x^2y^5z^3 + 2xy^3z^2$$

18. Factor completely, or state that the polynomial is prime.

$$12x^4 - 46x^3 - 8x^2$$

19. Factor completely, or state that the polynomial is prime.

$$x^2 - x + y - xy$$

20. Factor completely, or state that the polynomial is prime.

$$16x^2 + 49y^2$$

21. Perform the indicated operation and simplify.

$$(5x^4y^2 + 6x^3y - 7y) - (3x^4y^2 - 5x^3y - 6y + 8x)$$

22. Perform the indicated operation and simplify.

$$(x^2 + 2x - 1)(x^2 + 3x - 4)$$

23. Perform the indicated operation and simplify.

$$\frac{x+4}{x^2-x-2} - \frac{2x+3}{x^2+2x-8}$$

24. Perform the indicated operation and simplify.

$$\frac{3y-7}{y^2-5y+6} - \frac{3}{y-3}$$

25. Perform the indicated operation and simplify.

$$\frac{x^2-4}{x^2+3x+2} \cdot \frac{x^2-5x+4}{4x^2-24x+32}$$

26. Perform the indicated operation and simplify.

$$\frac{x^2-64}{9x-36} \div \frac{x^2+16x+64}{x^2+4x-32}$$

27. Simplify:

$$\frac{\frac{6}{2x-8} + \frac{10}{x^2-4x}}{\frac{1}{x^2-x-12} - \frac{2}{x^2-16}}$$

28. What is the degree of the following polynomial?

$$-18x^3y^2 + 36x^4y^3 - 12x^2y$$

29. Perform the indicated operation.

$$(4x^3 - 6x - 11) \div (2x - 4)$$

30. A guy wire runs from the top of a telephone pole to the ground. The length of the wire is 1 foot greater than the height of the pole. The distance from the base of the pole to the stake that holds the wire in the ground is 1 foot less than the height of the pole. What is the length of the wire?

31. A grocer needs to mix raisins at \$2.00 per pound with granola at \$3.25 per pound to obtain 10 pounds of a mixture that costs \$2.50 per pound. How many pounds of raisins and how many pounds of granola must be used?

32. Working alone, you can mow the lawn in 3 hours. Working with your friend, you can do it in 2 hours. How long would it take your friend to do the job alone?