



Algebra 2 Summer Review

(for students who have completed Geometry and are entering Algebra 2)

Reviewing key concepts from Algebra 1 is an excellent way to be fully prepared for the pace and rigor of Algebra 2. The following packet will help you practice and also self-assess any concepts that you may want to spend extra time on before the start of school. You should not use any type of calculator while doing these problems. You will take a low-stakes diagnostic quiz on this material to identify any gaps in critical concepts. You will be given additional assignments to help you learn the material until you can demonstrate mastery.

A breakdown of the skills covered in the packet by item number is as follows:

- #1-8 Solving one-step and multi-step equations
- #9-10 Solving and graphing inequalities
- #11-12 Graphing lines from equations in standard and slope-intercept form
- #13-14 Graphing linear inequalities
- #15-18 Solving systems of linear equations using substitution and elimination (also called linear elimination)
- #19-22 Rules of exponents
- #23-24 Simplifying polynomial expressions
- #25-26 Binomial multiplication
- #27-30 Factoring binomial and trinomial expressions

If you would like additional resources to support your practice, we recommend Khan Academy as a great first step. For in-person support, consider a peer tutor or a more structured option such as Mathnasium. For a list of peer tutors who are willing to tutor over the summer for community service hours, please contact Linda Graham, Math Department Chair.

Summer Review

Solve each equation.

1) $7 = n + 6$

2) $-11 + n = -10$

3) $\frac{-4 + r}{14} = -1$

4) $6x - 3 = -93$

5) $5(6 + 4a) = 110$

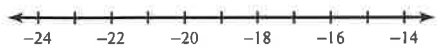
6) $-96 = 8(-6m + 6)$

7) $-(r + 3) + 8 = 37 + 3r$

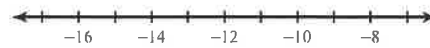
8) $-5(-6m - 1) = 5m - 20$

Solve each inequality and graph its solution.

9) $x - 14 \geq -30$

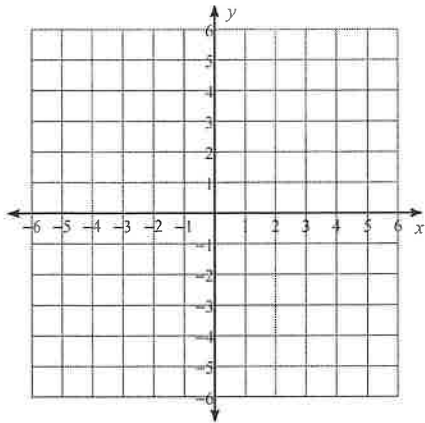


10) $-16 + n < -28$

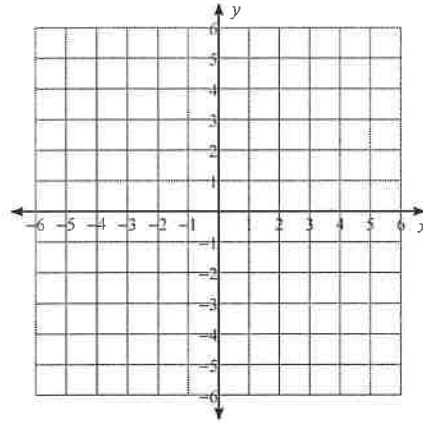


Sketch the graph of each line.

11) $y = 2x - 3$

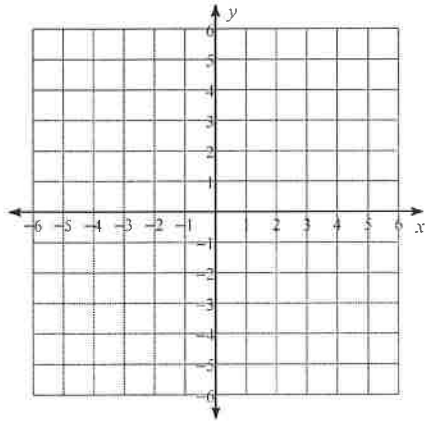


12) $3x + y = 1$

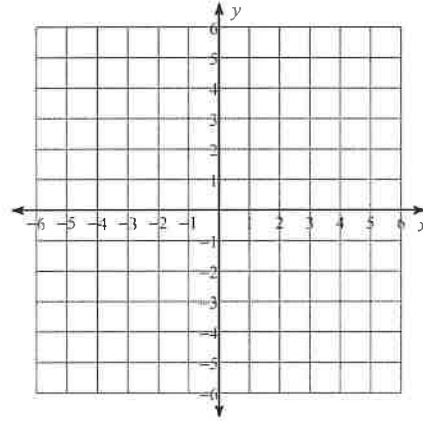


Sketch the graph of each linear inequality.

13) $y > -3x - 1$



14) $y \geq -5$



Solve each system by substitution.

$$\begin{aligned} 15) \quad & 6x + y = 2 \\ & -6x - y = 3 \end{aligned}$$

$$\begin{aligned} 16) \quad & x + y = 5 \\ & 8x - 8y = 24 \end{aligned}$$

Solve each system by elimination.

$$\begin{aligned} 17) \quad & -6x + 2y = -22 \\ & -12x + 9y = 6 \end{aligned}$$

$$\begin{aligned} 18) \quad & 2x - 3y = 6 \\ & 6x - 9y = 18 \end{aligned}$$

Simplify. Your answer should contain only positive exponents.

$$19) \quad 3v^3 \cdot 4v^4 \cdot 2v^2$$

$$20) \quad (2k^{-2})^2$$

$$21) \quad (n^{-1})^{-4}$$

$$22) \quad \frac{3x^{-4}}{2x^0}$$

Simplify each expression.

23) $(7x^3 + x + 7) + (x - 3x^2 + 2x^3)$

24) $(7n + 7n^4 + 8n^2) - (4n^3 + 7n^2 + 3n)$

Find each product.

25) $(p - 3)(p - 5)$

26) $(4r - 3)(3r + 7)$

Factor the common factor out of each expression.

27) $-30 + 12b - 24b^2$

28) $-10k^2 + 14k^3 + 14k^4$

Factor each completely.

29) $4v^2 - 72v + 320$

30) $7x^2 - 10x$

Answers to Summer Review

1) $\{1\}$

2) $\{1\}$

3) $\{-10\}$

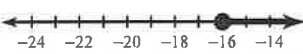
4) $\{-15\}$

5) $\{4\}$

6) $\{3\}$

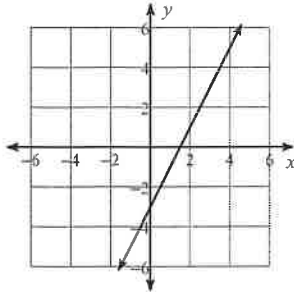
7) $\{-8\}$

8) $\{-1\}$

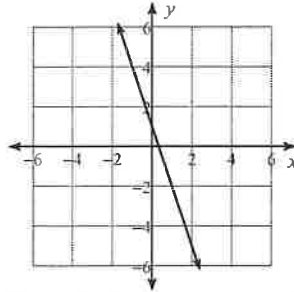
9) $x \geq -16$: 

10) $n < -12$: 

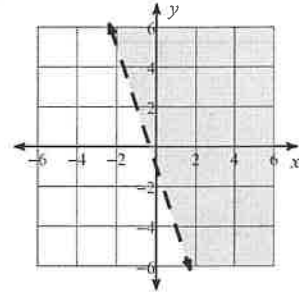
11)



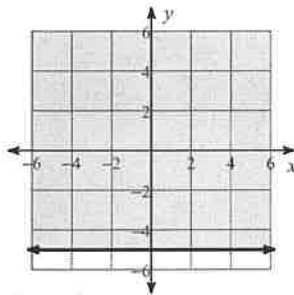
12)



13)



14)



15) No solution

16) $(4, 1)$

17) $(7, 10)$

18) Infinite number of solutions

19) $24v^9$

20) $\frac{4}{k^4}$

21) n^4

22) $\frac{3}{2x^4}$

23) $9x^3 - 3x^2 + 2x + 7$

24) $7n^4 - 4n^3 + n^2 + 4n$

25) $p^2 - 8p + 15$

26) $12r^2 + 19r - 21$

27) $6(-5 + 2b - 4b^2)$

28) $2k^2(-5 + 7k + 7k^2)$

29) $4(v - 10)(v - 8)$

30) $x(7x - 10)$