

Please complete the following Algebra 1 review problems. Show all of your work. Use online tutorials, YouTube, and your old notes to assist in your understanding. This will be collected and graded for accuracy on the first day of school.

7) -5^0

Evaluate the algebraic expression for the given value or values of the variable(s).

1) $\frac{y - 5x}{6x + xy}$; $x = -2$ and $y = 1$

8) $2^3 \cdot 2^{-4}$

Evaluate the expression for the given values of x and y.

2) $\frac{|x|}{x} + \frac{|y|}{y}$; $x = 6$ and $y = -3$

Simplify the exponential expression.

9) $(-9x^3y)(-6x^2y^4)$

Simplify the algebraic expression.

3) $(10z + 12) - (3z - 4)$

10) $\frac{-9x^6y^{13}z^{10}}{3x^3y^4z^9}$

4) $-5(2x - 9) - 4x + 8$

Evaluate the exponential expression.

5) 10^0

11) $\left(\frac{-18x^9y^7}{6x^{12}y^{-3}}\right)^3$

6) $(-5)^0$

Simplify each radical expression.

12) $\sqrt{144} + \sqrt{25}$

13) $\sqrt{\frac{4}{49}}$

18) $27^{4/3}$

14) $\sqrt{49} + \sqrt{405} + \sqrt{36} + \sqrt{720}$

19) $16^{-3/2}$

15) $8\sqrt{27} - 4\sqrt{108} - 4\sqrt{243}$

Simplify using properties of exponents.

20) $(16x^6y^6)^{1/2}$

Rationalize the denominator.

16) $\frac{\sqrt{7}}{\sqrt{13}}$

Solve the radical equation, and check all proposed solutions.

21) $\sqrt{x+4} = 2$

Evaluate the expression without using a calculator.

17) $100^{1/2}$

Perform the indicated operations. Write the resulting polynomial in standard form.

$$22) (5x^2 + 4x + 7) + (2x^2 + 5x + 6) - (5x + 2)$$

Find the product.

$$23) (7x - 4)(9x + 8)$$

$$24) (5x + 2)^2$$

$$25) (x + 4)(x^2 - 4x + 16)$$

Factor out the greatest common factor.

$$26) 14x^4 - 4x^3 + 10x^2$$

Factor by grouping. Assume any variable exponents represent whole numbers.

$$27) x^3 + 4x^2 + 5x + 20$$

Factor the trinomial, or state that the trinomial is prime.

$$28) x^2 - x - 12$$

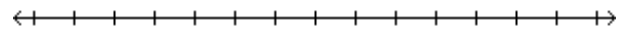
$$29) 7x^2 + 3x - 4$$

Factor the difference of two squares.

$$30) 64x^2 - 81$$

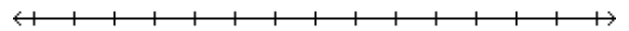
Solve the linear inequality. Use interval notation to express the solution set and graph the solution set on a number line.

$$31) 3x - 3 > 2x - 4$$



Solve the compound inequality. Use interval notation to express the solution set and graph the solution set on a number line.

$$32) 14 \leq 3x + 2 \leq 23$$



Solve the system of equations by the substitution method.

$$\begin{aligned} 37) \quad x + 9y &= -57 \\ -5x + 8y &= -33 \end{aligned}$$

Solve the linear equation.

$$33) 3(x + 1) + 10 = 2(x + 2) + 9$$

Solve the system by the elimination method.

$$\begin{aligned} 38) \quad -3x + 5y &= 21 \\ -7x - 4y &= 2 \end{aligned}$$

$$34) \frac{5x}{7} - x = \frac{x}{63} - \frac{4}{9}$$

Solve the formula for the specified variable.

$$35) \frac{1}{a} + \frac{1}{b} = \frac{1}{c} \quad \text{for } c$$

Solve the problem.

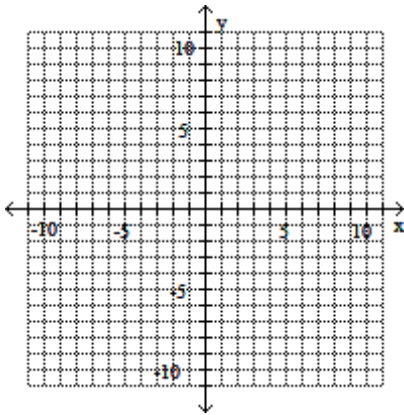
- 39) One number is 1 less than a second number. Twice the second number is 38 more than 5 times the first. Find the two numbers.

Determine whether the given ordered pair is a solution of the system.

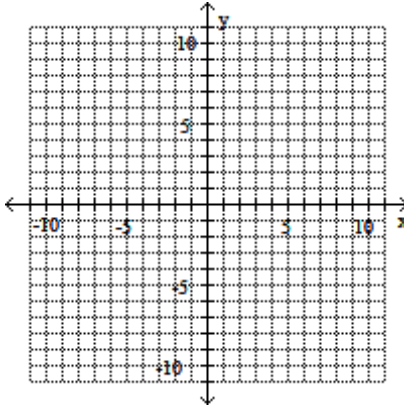
$$\begin{aligned} 36) \quad (5, -2) \\ 2x - y &= 8 \\ 4x - 2y &= 16 \end{aligned}$$

Use the vertex and intercepts to sketch the graph of the quadratic function.

40) $f(x) = x^2 - 6x + 5$



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



Use the given conditions to write an equation for the line in slope-intercept form.

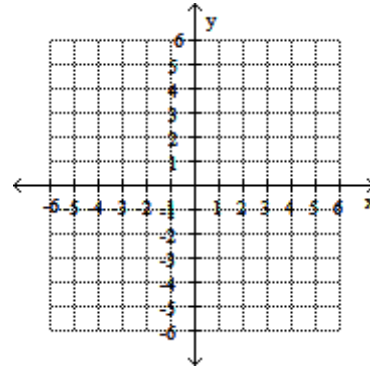
42) Passing through (6, 4) and (8, 7)

Use the given conditions to write an equation for the line in point-slope form.

43) Passing through (2, 3) and (5, 8)

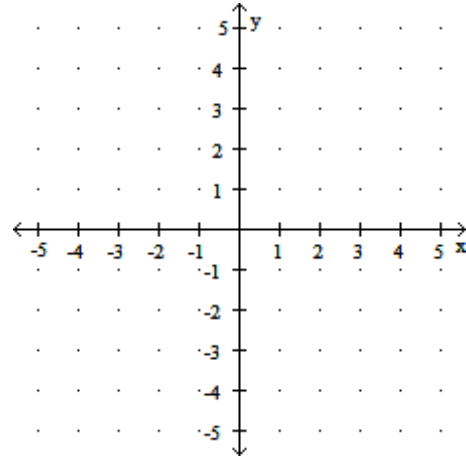
Graph the line whose equation is given.

44) $y = -\frac{2}{5}x + 2$



Graph the equation in the rectangular coordinate system.

45) $x = 2$



Graph the linear function by plotting the x- and y-intercepts.

46) $\frac{1}{3}x + y = 2$

