

Algebra 2 Trig Honors

Review R1, 1.1-1.3

1. Evaluate: $\left(-\frac{3}{2}\right)^{-1} + \left(\frac{5}{9}\right) - \left(\frac{3}{8}\right)^{-1}$

$$\begin{aligned} &-\frac{2}{3} + \frac{5}{9} - \frac{8}{3} \\ &= -\frac{6}{9} + \frac{5}{9} - \frac{24}{9} = -\frac{25}{9} \end{aligned}$$

3. Solve for x:

$$y = 2xz + 5w - 3x$$

$$y - 5w = x(2z - 3)$$

$$\frac{y - 5w}{2z - 3} = x$$

2. Solve for x: $\left[2 + \frac{3x-1}{7} = \frac{5-4x}{8}\right] \cdot 56$

$$112 + 8(3x-1) = 7(5-4x)$$

$$112 + 24x - 8 = 35 - 28x$$

$$52x = -69$$

$$x = -\frac{69}{52}$$

Solve for x, graph, and give your final solution in interval notation.

4. $2x - 10 \leq 6(x + 4) + 2$

$$2x - 10 \leq 6x + 24 + 2$$

$$2x - 10 \leq 6x + 26$$

$$-36 \leq 4x$$

$$-9 \leq x$$



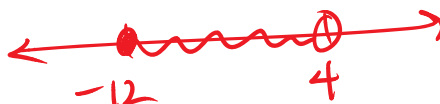
$$[-9, \infty)$$

5. $-8 \leq -\frac{1}{2}(4 - x) < 0$

$$16 \geq 4 - x > 0$$

$$12 \geq -x > -4$$

$$-12 \leq x < 4$$



$$[-12, 4)$$

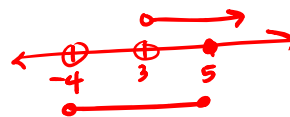
Evaluate.

6. $(-2, 6] \cup (-13, -8)$

answer

7. $(-4, 5] \cap (3, \infty)$

$$(3, 5]$$



8. Write the real number property that justifies the statements.

a. $(2x)(5y) = (5y)(2x)$

Property: commutative (\cdot)

b. $\left(\frac{1}{a}\right)a = 1$

Property: multiplicative inverse

c. $x(y+z) = xy + xz$

Property: distributive property

d. $ax + by + cz = ax + cz + by$

Property: commutative (+)

9. Consider the set of perfect square numbers, $\{1, 4, 9, 16, 25, \dots\}$. Is this set closed under multiplication? Explain your answer.

x^2 is a perfect square
 y^2 is a perfect square

$x^2 \cdot y^2$
 $(xy)^2 \leftarrow$ a perfect square! $\ddot{\text{u}}$

10. Margo has a new Xerox machine that can complete a whole job in 6 hours. With the help of the older model the job can be completed in 4 hours. How long would it take the older model to complete the job on its own?

	r	t	
new machine	$\frac{1}{6}$	4	} 1 job
old machine	$\frac{1}{x}$	4	

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

$$\boxed{x=12}$$

It would take the older model 12 hours to complete the job.

11. You and your best friend are paddling a canoe. It takes you 4 minutes and 10 seconds to row upstream (against the current) and it takes you 2.5 minutes to row back downstream to where you started. You estimate that you are able to row at a rate of 4 meters per second. How fast is the current flowing in meters per second?

	r	t	= d
upstream	$4-x$	250	$250(4-x)$
down stream	$4+x$	150	$150(4+x)$

Watch your units!

$$250(4-x) = 150(4+x)$$

$$1000 - 250x = 600 + 150x$$

$$400 = 400x$$

The current is flowing 1 m/s.

12. How many liters of 75% hydrochloric acid solution must you add to 20 liters distilled water to obtain a 40% solution? (Round to the nearest hundredth)

$$\frac{0.75 \cdot x + 0.20}{x + 20} = 0.4$$

$$0.75x = 0.4x + 8$$

$$0.35x = 8$$

$$x = 22.86 \text{ L}$$

13. Write in words the geometric interpretation of $|x+3| \leq 5$.

x is at most 5 units from -3.

14. Write an absolute value inequality for the following: x is no less than 5 units from -2.

$$|x+2| \geq 5$$

15. Solve for x :

a. $3|2x-8|+3=27$

$$|2x-8|=8$$

$$2x-8=8 \text{ or } 2x-8=-8$$

$$\boxed{x=0 \text{ or } 8}$$

c. $4 \leq |12-2x| \leq 8$

$$4 \leq 12-2x \leq 8 \text{ OR } -4 \geq 12-2x \geq -8$$

$$-8 \leq -2x \leq -4 \quad -16 \geq -2x \geq -20$$

$$\boxed{4 \geq x \geq 2 \text{ OR } 8 \leq x \leq 10}$$

b. $|3x-1|=x-1$

$$3x-1=x-1$$

$$2x=0$$

$$\cancel{x=0}$$

Need to check both!

OR $3x-1=-x+1$

$$4x=2$$

$$\cancel{x=\frac{1}{2}}$$

NO SOLUTION!

d. $\sqrt{(3x+5)^2} \geq 4$

$$|3x+5| \geq 4$$

$$3x+5 \geq 4 \text{ OR } 3x+5 \leq -4$$

$$\boxed{x \geq -\frac{1}{3} \text{ OR } x \leq -3}$$