

MATH 5: HOMEWORK 6,
October 27, 2024

- List all sets a number belongs to: $-17, 0, 15, -7\frac{13}{14}$
- Compute:

$$1 + 2 \cdot (-3 + (-13) - 7) = \frac{1}{(-3 + (-13) - 7)} =$$

- Find reciprocal (invers) element for the following numbers. If $a \in \mathbb{Q}$, then reciprocal of a $r(a)$ is such that $a \cdot r(a) = 1$. E.g. reciprocal of $\frac{3}{17}$ is $\frac{17}{3}$. Indeed $\frac{3}{17} \cdot \frac{17}{3} = 1$

$$r\left(\frac{13}{7}\right) = \quad r\left(\frac{1}{7}\right) = \quad r(3) = \quad r\left(1\frac{6}{7}\right) =$$

$$r\left(3\frac{1}{5}\right) = \quad r(0.1) = \quad r(1.1) = \quad r\left(\frac{a}{b}\right) =$$

- Solve equations (**remember** for dividing/multiplying fractions they need to **be improper**):

$$3x = 5$$

$$5x = 3$$

$$15x = 5$$

$$\frac{3}{5}x = \frac{10}{55}$$

$$\frac{2}{11}x = \frac{11}{2}$$

$$\frac{2}{11}x = 5\frac{1}{2}$$

$$\frac{3}{4}(x + 8) = 10$$

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

$$\frac{1}{2}x + \frac{1}{3}x = x - \frac{1}{12}$$

- Using commutative law for multiplication ($a \cdot b = b \cdot a$) recognize similar terms and simplify.
For example (e.g.) $ac^2b = bac^2 = c^2ab$.

$$3a(b + ac) - c(3a^2 - 2) + 2ab =$$

$$(a + 1)^2 = (a + 1)(a + 1) = a(a + 1) + 1(a + 1) =$$

$$2a(2a + 3) + 3(2a + 3) =$$

- Pirate captain John can drink a barrel of rum in 14 days. If he drinks together with pirate Bill, they will finish the barrel in 10 days. How long would it take Bill to drink the barrel of rum alone?
- A truck can cover distance between two cities in 10 hours. A fast car, which goes 10 miles per hour faster than the truck, can cover the same distance in 8 hours. What is the distance? [Hint: if the speed of the truck is x mph, then the distance is equal to $10x$ miles. On the other hand....]
- Solve the following puzzle (different letters stand for different digits):

$$\begin{array}{r} \text{THIS} \\ + \text{IS} \\ \hline \text{EASY} \end{array}$$