6/24/2023

Exam #1 Review

Negatives:
Multiplication and Division
Negatives cancel in pairs: two negatives, they cancel each other out.
Multiply two negatives: get a positive
Dividing two negatives: get a positive
If there is an odd number of negatives: there is always one stray negative leftover, and the result is negative.

$$(-5)(-6) = 30$$
$$(-5)(-6)(-2) = -60$$

For addition and subtraction:

Adding a negative is like subtracting a positive
Subtracting a negative is like adding a positive.

$$5 - 6 = 5 + (-6) = -1$$
$$5 - (-6) = 5 + 6 = 11$$

Converting % to fraction:

$$a\% = \frac{a}{100} = a \div 100 = a \times \frac{1}{100}$$

$$\frac{1}{4}\% = \frac{1}{4} \times \frac{1}{100} = \frac{1}{400} = 0.0025$$

$$5\frac{1}{3} - 1\frac{5}{6} = \frac{16}{3} - \frac{11}{6} = \frac{16}{3}\left(\frac{2}{2}\right) - \frac{11}{6} = \frac{32}{6} - \frac{11}{6} = \frac{21}{6} = \frac{7}{2} = 3\frac{1}{2}$$

$$3\frac{1}{5} - 2\frac{1}{3} = \frac{16}{5} - \frac{7}{3} = \frac{16}{5}\left(\frac{3}{3}\right) - \frac{7}{3}\left(\frac{5}{5}\right) = \frac{48}{15} - \frac{35}{15} = \frac{13}{15}$$

$$4\frac{1}{2} \div 2\frac{1}{2} + 8 - 4 \div \frac{1}{2} = \frac{9}{2} \div \frac{5}{2} + 8 - 4 \div \frac{1}{2} = \frac{9}{2} \times \frac{2}{5} + 8 - 4 \times 2 =$$

$$\frac{9}{5} + 8 - 8 = \frac{9}{5} = 1\frac{4}{5}$$

17. Simplify. $5.5^2 \times \left[(6 - 7.8) \div 0.06 + 0.12\right]$ $= -903.87$

$$5.5^2 \times [(6 - 7.8) \div 0.06 + 0.12] =$$
$$5.5^2 \times [(-1.8) \div 0.06 + 0.12] =$$
$$5.5^2 \times [-30 + 0.12] =$$
$$5.5^2 \times [-29.88] =$$
$$30.25 \times (-29.88) = -903.87$$

b. $\sqrt{1\dfrac{9}{25}} + \dfrac{2}{3} - \dfrac{\frac{1}{2}}{4 \cdot \frac{\sqrt{4}}{7}}$

$\sqrt{\dfrac{34}{25}} + \dfrac{2}{3} - \dfrac{7}{\phantom{0}} \; 7/10 = \sqrt{\dfrac{34}{25}} + \dfrac{11}{48} = \dfrac{\sqrt{34}}{5} + \dfrac{11}{48}$

$\phantom{xxxxxx} = \dfrac{48\sqrt{34} + 55}{240}$

c. $\dfrac{153}{21} \rightarrow 7\dfrac{2}{7}$

$$\sqrt{1\frac{9}{25} + \frac{2}{3} - \frac{\frac{1}{2}}{4 \cdot \frac{\sqrt{4}}{7}}} = \sqrt{1\frac{9}{25} + \frac{2}{3} - \frac{\frac{1}{2}}{4 \cdot \frac{2}{7}}} = \sqrt{1\frac{9}{25} + \frac{2}{3} - \frac{\frac{1}{2}}{\left(\frac{8}{7}\right)}} = \sqrt{1\frac{9}{25} + \frac{2}{3} - \frac{1}{2} \times \frac{7}{8}} =$$

$$\sqrt{\frac{34}{25}} + \frac{2}{3} - \frac{1}{2} \times \frac{7}{8} = \frac{\sqrt{34}}{\sqrt{25}} + \frac{2}{3} - \frac{1}{2} \times \frac{7}{8} = \frac{\sqrt{34}}{5} + \frac{2}{3} - \frac{1}{2} \times \frac{7}{8} = \frac{\sqrt{34}}{5} + \frac{2}{3} - \frac{7}{16} =$$

$$\frac{\sqrt{34}}{5} + \frac{2}{3}\left(\frac{16}{16}\right) - \frac{7}{16}\left(\frac{3}{3}\right) = \frac{\sqrt{34}}{5} + \frac{32}{48} - \frac{21}{48} = \frac{\sqrt{34}}{5} + \frac{11}{48}$$

$$\frac{\sqrt{34}}{5}\left(\frac{48}{48}\right) + \frac{11}{48}\left(\frac{5}{5}\right) = \frac{48\sqrt{34}}{240} + \frac{55}{240} = \frac{48\sqrt{34} + 55}{240}$$