SOLUTIONS

WORKSHEET: FRACTIONS

Applied Mathematics for Electronics Engineering (201-943-DW)

Sept. 6th 2011, Instructor: Emilie Richer

Perform the following operations. Express your answer as a reduced fraction.

(1) $\frac{\frac{2}{3}\times\frac{3}{2}}{\frac{7}{5}} = \frac{1}{7/5} = 1 \times \frac{5}{7} = \boxed{\frac{5}{7}}$

(2) $\frac{\frac{1}{2}+1}{-2\times\frac{4}{3}+3} = \frac{\frac{1}{2}+\frac{2}{2}}{-\frac{6}{3}\times\frac{4}{3}+\frac{9}{3}} = \frac{\frac{3}{2}}{-\frac{8}{3}+\frac{9}{3}} = \frac{3/2}{1/3} = \frac{3}{2}\times\frac{3}{1} = \boxed{\frac{9}{2}}$

(3) $\frac{1}{5}\div\frac{2}{3} = \frac{1}{5}\times\frac{3}{2} = \boxed{\frac{3}{10}}$

(4) $\frac{1}{2}-3 = \frac{1}{2}-\frac{6}{2} = \boxed{-\frac{5}{2}}$

(5) $11-\frac{3}{10} = \frac{110}{10}-\frac{3}{10} = \boxed{\frac{107}{10}}$

(6) $\frac{2}{3}+\frac{1}{5} = \frac{10}{15}+\frac{3}{15} = \boxed{\frac{13}{15}}$

(7) $\frac{1}{4}-2 = \frac{1}{4}-\frac{8}{4} = \boxed{\frac{-7}{4}}$

(8) $\frac{2}{5}-1+\frac{1}{3} = \frac{6}{15}-\frac{15}{15}+\frac{5}{15} = \boxed{\frac{-4}{15}}$

(9) $\frac{-\frac{1}{2}+4}{-2+\frac{1}{3}} = \frac{-1/2 + 8/2}{-6/3 + 1/3} = \frac{7/2}{-5/3} = \frac{7}{2} \times -\frac{3}{5} = \boxed{-\frac{21}{10}}$

(10) $\frac{1}{6} - \frac{2}{3} + \frac{15}{2} = \frac{1}{6} - \frac{4}{6} + \frac{45}{6} = \frac{42}{6} = \frac{21}{3} = \boxed{7}$

(11) $\frac{(-2)(5)+3}{2-\frac{1}{5}} = \frac{-10+3}{\frac{10}{5} - \frac{1}{5}} = \frac{-7}{9/5} = -7 \times \frac{5}{9} = \boxed{-\frac{35}{9}}$

(12) $\frac{-10(2)+5-\frac{1}{2}}{3-\frac{7}{2}+\frac{1}{4}} = \frac{-20+5-\frac{1}{2}}{12/4 - 14/4 + 1/4} = \frac{-\frac{30}{2} - \frac{1}{2}}{-1/4} = \frac{-31/2}{-1/4} = \frac{-31}{2} \cdot \frac{-4}{1} = \boxed{62}$

(13) $\frac{\frac{1}{2}+\frac{1}{3}-\frac{5}{6}}{2^2-4+3} = \frac{\frac{3}{6} + \frac{2}{6} - \frac{5}{6}}{3} = \frac{0}{3} = \boxed{0}$

(14) $5 + \frac{(-3)(-1)^3+2}{\frac{9}{2}-(-2)(-3)} = 5 + \frac{3+2}{9/2 - 6} = 5 + \frac{5}{9/2 - 12/2} = 5 + \frac{5}{-3/2} = 5 + 5 \times -\frac{2}{3}$

$= 5 - \frac{10}{3}$

$= \frac{15}{3} - \frac{10}{3} = \boxed{5/3}$

(15) $3^{-1} + \frac{2+5^{-2}}{-1+2\times5^{-1}}$

$= \frac{1}{3} + \frac{2 + \frac{1}{5^2}}{-1 + 2 \times \frac{1}{5}} = \frac{1}{3} + \frac{\frac{50}{25} + \frac{1}{25}}{-1 + \frac{2}{5}} = \frac{1}{3} + \frac{\frac{51}{25}}{-\frac{5}{5} + \frac{2}{5}}$

$= \frac{1}{3} + \frac{51/25}{-3/5} = \frac{1}{3} + \frac{51}{25} \times -\frac{5}{3}$

$= \frac{1}{3} + \frac{51}{-15} = \frac{5}{15} - \frac{51}{15} = \boxed{\frac{-46}{15}}$