Adding & Subtracting Rational Expressions

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PRE-CALCULUS 11
RATIONAL EXPRESSIONS
ADDING & SUBTRACTING RATIONAL EXPRESSIONS

A. Adding & Subtracting Fractions

1) Simplify the following.

a) $\frac{1}{5}+\frac{3}{5}$

$= \frac{4}{5}$

b) $\frac{1\cdot 3}{6\cdot 3}-\frac{7\cdot 2}{9\cdot 2}$

$\frac{3}{18}-\frac{14}{18}$

$= \frac{-11}{18}$

B. Adding and Subtracting Rational Expressions

1) State the non-permissible values and simplify each expression.

a) $\frac{5\cdot 2}{3x^2\cdot 2}+\frac{x\cdot 3x^2}{2\cdot 3x^2}$ $x \neq 0$

$\frac{10}{6x^2}+\frac{3x^3}{6x^2}$

$= \frac{3x^3+10}{6x^2}$

b) $\frac{1\cdot 5x}{6xy\cdot 5x}-\frac{2\cdot 2y}{15x^2\cdot 2y}$ $x \neq 0, y \neq 0$

$\frac{5x}{30x^2y}-\frac{4y}{30x^2y}$

$= \frac{5x-4y}{30x^2y}$

c) $\frac{(x-2)}{4x^2} + \frac{(x+6)}{6x}$ $\quad x \neq 0$

$\frac{3x-6}{12x^2} + \frac{2x^2+12x}{12x^2}$

$= \boxed{\frac{2x^2+15x-6}{12x^2}}$

d) $\frac{2a+1}{2a^2b} \div \frac{b-3}{9ab^2}$ $\quad a \neq 0, b \neq 0$

$\frac{9b(2a+1)}{2a^2b} + \frac{2a(-b+3)}{9ab^2}$

$\frac{18ab+9b}{18a^2b^2} + \frac{-2ab+6a}{18a^2b^2}$

$\boxed{\frac{6a+16ab+9b}{18a^2b^2}}$

e) $\frac{4}{3a^3} + \frac{a}{6a^2} - \frac{5}{2a}$ $\quad a \neq 0$

$\frac{8}{6a^3} + \frac{a^2}{6a^3} - \frac{15a^2}{6a^3}$

$\frac{-14a^2+8}{6a^3}$

$\frac{2(-7a^2+4)}{6a^3}$

$\frac{3}{}$

$= \boxed{\frac{-7a^2+4}{3a^3}}$

f) $\frac{w+3}{4w^2} \div \frac{w-1}{3w} + \frac{w+2}{6}$ $\quad w \neq 0$

$\frac{3(w+3)}{4w^2} + \frac{4w(-w+1)}{3w} + \frac{2w^2(w+2)}{6}$

$\frac{3w+9}{12w^2} + \frac{-4w^2+4w}{12w^2} + \frac{2w^3+4w^2}{12w^2}$

$= \boxed{\frac{2w^3+7w+9}{12w^2}}$

Assignment: Pg. 553 #3, 5, 6, 7, 8, 9, 11