

March 22nd

Due Today: HW 10.1

Due Tomorrow: HW 10.2

Unit 10: Algebraic Fractions**Lesson 10.2: Adding and Subtracting Algebraic Fractions**

Answers to HW 10.1

1) $m - 1$

5) $\frac{m-6}{3m}$

9) $\frac{1}{3x}$

13) $\{7, -3\}$

17) $\{2, -10\}$

2) $\frac{1}{n-1}$

6) $\frac{n+4}{n-9}$

10) $v - 1$

14) $\{-6\}$

18) $\{1, -1\}$

3) $\frac{5(x+1)}{2}$

7) $\frac{5p+7}{3p-5}$

11) $\frac{b-1}{b(3b+4)}$

15) $\left\{-\frac{6}{7}\right\}$

19) $\frac{5}{4}$

4) $r - 1$

8) $\frac{2}{r-6}$

12) n

16) $\{0\}$

20) $-\frac{4}{65}$

HOMEWORK REVIEW

$$\begin{aligned}
 \textcircled{a} \quad \frac{x^2 - 4x - 5}{3x^3 - 12x^2 - 15x} &= \frac{(x-5)(x+1)}{3x(x^2 - 4x - 5)} \\
 &\quad \uparrow \\
 &\quad \text{fact} \\
 \text{OR} \\
 \frac{\cancel{x^2 - 4x - 5}}{3x(\cancel{x^2 - 4x - 5})} &= \frac{\cancel{(x-5)(x+1)}}{3x(\cancel{x-5})(\cancel{x+1})} \\
 &= \frac{1}{3x}
 \end{aligned}$$

$$\textcircled{8} \quad \frac{2r+4}{r^2+r-42} \leftarrow \text{gcf}$$

$$\frac{2(\cancel{r+7})}{(\cancel{r+7})(r-6)} = \boxed{\frac{2}{r-6}}$$

$$\textcircled{6} \quad \frac{n^2 + 13n + 36}{n^2 - 81} \leftarrow \diamond$$
$$n^2 - 81 \leftarrow \bullet_s$$

$$\frac{\cancel{(n+9)}(n+4)}{\cancel{(n+9)}(n-9)} = \frac{n+4}{n-9}$$

$$\textcircled{15} \quad \frac{18x+6}{42x+36}$$

$$42x+36=0$$

$$-36 \quad -36$$

$$\frac{42x}{42} = \frac{-36}{42}$$

$$x = \frac{-6}{7}$$

$$\textcircled{18} \quad \frac{4x^2 + 8x + 4}{8x^2 - 8}$$

$$8x^2 - 8 = 0$$

$$8(x^2 - 1) = 0$$

$$8(x+1)(x-1) = 0$$

$$\cancel{8=0} \quad \begin{array}{ll} x+1=0 & x-1=0 \\ x=-1 & x=1 \end{array}$$

$$\text{ex vals: } -1, 1$$

$$\textcircled{1a} \quad \frac{10r-20}{8r-16}, r=5$$

$$\frac{10(5)-20}{8(5)-16} = \frac{50-20}{40-16} = \frac{30}{24}$$

$$= \frac{5}{4}$$

Adding/Subtracting Fractions

$$\frac{3}{3} \frac{3}{2} + \frac{5}{3} \frac{2}{2}$$

$$\frac{9}{6} + \frac{10}{6} = \boxed{\frac{19}{6}}$$

① CD: 6

② Use fancy version of 1.

③ add/sub across numerator only

④ Reduce if possible

Adding / Subtracting Algebraic Fractions

Example 1:

$$\frac{2x + 1}{5x} + \frac{3x - 6}{5x}$$

$$\frac{(2x+1)+(3x-6)}{5x} = \frac{5x-5}{5x} \leftarrow \text{get}$$

$$= \frac{\cancel{5}(x-1)}{\cancel{5}x}$$

$$\boxed{= \frac{x-1}{x}}$$

Adding / Subtracting Algebraic Fractions

Example 2:

$$\frac{\overbrace{(x-2)}^{\text{arc}}}{\underbrace{(x-2)}_{\text{arc}}} \frac{6}{3} - \frac{\overbrace{(x-4)}^{\text{arc}}}{\underbrace{x-2}_{\text{arc}}} \frac{3}{3}$$

$$\frac{\overbrace{(6x-12)}^{\text{arc}}}{\underbrace{3(x-2)}_{\text{arc}}} - \frac{\overbrace{(3x-12)}^{\text{arc}}}{\underbrace{3(x-2)}_{\text{arc}}}$$

$$\frac{\underline{6x-12} - \underline{3x+12}}{3(x-2)}$$

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

$$\boxed{= \frac{x}{x-2}}$$

1. use fancy versions of one to get a common denominator
2. add/sub across the numerator
3. factor + simplify if you can!

Example 3:

$$\frac{(2x+8) \cdot 4x}{(2x+8) \cdot 3x} - \frac{6 \cdot 3x}{(2x+8) \cdot 3x}$$

$$\frac{8x^2 + 32x - 18x}{3x(2x+8)}$$

$$= \frac{8x^2 + 14x}{3x(2x+8)} \leftarrow \text{gcf}$$

$$= \frac{2x(4x+7)}{3x \cdot 2(x+4)}$$

$$= \frac{\cancel{2}x(4x+7)}{3\cancel{6}x(x+4)}$$

$$= \frac{4x+7}{3(x+4)}$$

③

$$\frac{\cancel{6}}{\cancel{6}x} - \frac{4x\cancel{6}x}{\cancel{6}x}$$

$$\frac{6}{6x} - \frac{4x \cancel{x}}{\cancel{6}x}$$

$$\frac{6}{6x} - \frac{4x}{6}$$

↓

$$\frac{36}{6(6x)} - \frac{24x^2}{6(6x)}$$

$$\frac{6}{6x} - \frac{4x^2}{6x}$$

$$\frac{3}{3} \frac{1}{x} - \frac{2xx}{3x}$$

$$\frac{36 - 24x^2}{6(6x)}$$

$$\frac{6 - 4x^2}{6x}$$

$$\frac{3 - 2x^2}{3x}$$

$$\frac{2 \cancel{2}(3 - 2x^2)}{\cancel{6}(6x)}$$

~~$$\frac{2(3 - 2x^2)}{6x}$$~~

$$\frac{2(3 - 2x^2)}{3 \cancel{6}x}$$

$$\frac{3 - 2x^2}{3x} = \frac{-2x^2 + 3}{3x}$$

$$\frac{3 - 2x^2}{3x}$$

Practice: Add or Subtract, and simplify.

Answer Bank:

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

$$\frac{3x^2 + 2x - 43}{5(x - 3)(x + 2)}$$

$$\frac{3 - 2x^2}{3x}$$

$$\frac{-10x^2 - 7x}{(x + 1)(5x + 4)}$$

$$\frac{5(-x + 1)}{6x(5x + 1)}$$

$$\frac{4x^3 - 5}{3x^2}$$

$$\frac{16x + 5}{2(5x + 2)}$$

$$\frac{x + 2}{2(x + 3)}$$

$$\frac{7x + 15}{(x + 5)(x + 1)}$$

$$\frac{4(x + 8)}{5(x + 3)}$$

Unit 10: Algebraic Fractions

Lesson #	Name	Recap	HW
10.1	<i>Intro to Quadratics</i>		<i>HW 10.1</i>
10.2	<i>Adding + Subtracting</i>		<i>HW 10.2</i>

