

Name \_\_\_\_\_  
Date \_\_\_\_\_

Introduction to Technical Mathematics  
Class #11-A www.wnyssis.com

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***Algebraic Fractions - Multiplication and Division / Addition and Subtraction***

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Quality – Accuracy – Transfer – 100%

**Section 1. Some That Are A Little Tougher. “O.T.T.S.”**

o.  $\frac{4x^2 + 9x - 9}{4x^2 - 8x}$

p.  $\frac{5a^2 + 39ab - 8b^2}{5a^2 + 4ab - b^2}$

**Section 2. Example Problems: Multiplication and Division.**

4. Multiply and/or Divide the Following Polynomials: Watch Your Signs!

a.  $\frac{30m^2}{18n} \cdot \frac{6n}{5m}$

b.  $\frac{16c^3}{21d^2} \div \frac{24c^4}{14d^3}$

c.  $\frac{a^2 - b^2}{10x^3} \cdot \frac{5x^2}{2a + 2b}$

d.  $\frac{8x^2}{x^2 - 25} \div \frac{4x}{3x + 15}$

5.  $\frac{6r^2}{5s^2} \cdot \frac{10rs}{6r^3}$

6.  $\frac{5x - 5y}{x^2y} \cdot \frac{xy^2}{x^2 - y^2}$

**Section 3. More Practice: Watch Your Signs.**

7.  $\frac{(a + 3)^2}{x^2} \cdot \frac{4x^2}{4a + 12}$

8.  $\frac{a^2 - 7a - 8}{2a + 2} \cdot \frac{5}{a - 8}$

9.  $\frac{y^2 - 81}{(y + 9)^2} \cdot \frac{10y + 90}{5y - 45}$

10.  $\frac{2x - 2}{30x^2} \cdot \frac{9x^2 - 27x}{x^2 - 9} \cdot \frac{x^2 - 2x - 15}{x^2 + 4x - 5}$

**Section 4. Division of Fractions: 4 Good ones.**

11.  $8rs \div \frac{24r}{s}$

12.  $\frac{3x - 3y}{xy^2} \div \frac{x^2 - y^2}{x^2y}$

13.  $\frac{y^2 - 3y - 10}{8y^2} \div \frac{2y - 10}{16y^2}$

14.  $\frac{y^2 - 49}{(y + 7)^2} \div \frac{3y - 21}{2y + 14}$

One that is a little Tougher:

15.  $\frac{3x^2 + 10x - 8}{36x^2 - 16} \times \frac{9x^2 + 15x + 6}{x^2 + 3x - 4}$

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*Chapter 9.3: Algebraic Fractions, Addition and Subtraction*

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The Need to "BUILD" a Common Denominator by Multiplication .

1. Rewrite the following as equivalent fractions with a common denominator by "building" that common denominator by multiplication.

a.  $\frac{3}{12}; \frac{1}{8}$

b.  $\frac{1}{3}; \frac{5}{x}$

\_\_\_\_\_

\_\_\_\_\_

c.  $\frac{1}{6c^2d^2}; \frac{5}{10cd}$

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d.  $\frac{5}{4(c+1)}; \frac{5}{6(c+1)}$

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e.  $\frac{5}{x^2-1}; \frac{1}{3x+3}$

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f.  $\frac{1}{3x-4}; \frac{5}{4-3x}$

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g.  $\frac{x-1}{4x^2-36}; \frac{x+7}{3x^2+18x+27}$

h.  $\frac{5}{2x^3-3x^2+x}; \frac{x}{x^4-x^2}; \frac{2-x}{2x^2+x-1}$

**Practice:** The "Negative" FOIL

**Simplify:**  $(4x^2 - 5) - (3x + 2)(x - 3)$

**Simplify:**  $(x + 7)(2x - 3) - (3x + 4)(x - 5)$

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*Chapter 9.4: Algebraic Fractions, Addition and Subtraction - Unlike Denominators*

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Thoughts to keep in mind:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

3. Add the following fractions with UNLIKE Denominators.

a.  $\frac{7y}{8} + \frac{3y}{10} - \frac{y}{5}$

b.  $\frac{1}{x} + \frac{1}{y} - \frac{1}{z}$

c.  $\frac{m+9}{2} + \frac{m-3}{3}$

d.  $\frac{3a-2}{5} - \frac{2a+4}{15}$

e.  $\frac{y-4}{4y^2} + \frac{3y-5}{3y}$

f.  $\frac{3x-4}{5x} - \frac{2x-3}{20x} + \frac{5x}{2}$

g.  $\frac{x+y}{x} - \frac{y-z}{y} - \frac{z-x}{z}$

h.  $\frac{2}{3y} - \frac{4y-7}{6y^2} + \frac{3y-2y^2}{4y^3}$

Some that area little Tougher.

i.  $\frac{q-3}{q^2-q-12} + \frac{q+1}{q^2-4q}$

j.  $\frac{2}{3} + \frac{3}{x+1} - \frac{x}{x^2-1}$

**Homework Section**

Section(s)	Page(s)	Problem(s)
9.2	308 → 309	9 → 41 E.O.O.
9.3	313 → 314	1 → 39 E.O.O.
9.4	318 → 319	1 → 33 E.O.O.