

SHARP

Worksheet 7: Algebraic Fractions

Grade 10 Technical Mathematics

1. Simplify the following fractions without the use of a calculator.

a) $\frac{1}{2} + \frac{3}{5}$

b) $\frac{3}{4} - \frac{7}{11}$

c) $\frac{x}{4} + \frac{3}{7}$

d) $\frac{7}{8} \times \frac{4}{21}$

e) $8\frac{1}{3} \div \frac{5}{12}$

f) $\frac{1}{5} \times 6\frac{2}{5}$

2. Simplify the following:

a) $\frac{x}{7} + \frac{3x+1}{3}$

b) $\frac{3}{x} + \frac{7}{x+1}$

c) $\frac{2x}{4+x} + \frac{x}{3}$

d) $\frac{a}{b} - \frac{3a}{4b}$

e) $\frac{3a+1}{a} - \frac{4b-1}{b}$

f) $\frac{7a-1}{6b+1} - \frac{b+3}{3a-2}$

g) $\frac{a+1}{b} \times \frac{b^2}{a^2-1}$

h) $\frac{a}{9} \times \frac{27}{a^3}$

i) $\frac{x^2+x}{3y} \times \frac{6y^2}{x} \times \frac{2}{x+1}$

j) $\frac{a+b}{a} \div \frac{ab+b^2}{a^2+a}$

k) $\frac{x}{4} \div \frac{x^2}{16}$

l) $\frac{3(a-1)}{5} \div \frac{9a^2-9}{15}$

3. Simplify the following; don't forget to factorise before simplifying:

a) $\frac{ab+3b+a^2+3a}{a^2-9} \times \frac{a^2+a-12}{a^2+7ab+6b^2}$

b) $\frac{y^3-64}{y^2-16} \div \frac{y^2+4y+16}{y^2+9y+20}$

c) $\frac{x^2-9x+14}{x^2+x-56} \times \frac{x^3+512}{x^2-4}$

d) $\frac{xy+2y-4x-8}{y^2-12y+32} \times \frac{y^2-y-56}{x^2+9x+14}$

e) $\frac{m^2+4m+2mn+8n}{m^2-5m-36} \div \frac{m^2-4n^2}{m^2-14m+45}$

f) $\frac{a^3-27}{6a^3+18a^2+54a} \times \frac{a^2+8a}{a^2-11a+24}$

g) $\frac{a^2-7a+6}{a^2-a-6} \times \frac{a^2+4a-21}{a^2-5a-6}$

h) $\frac{p^2-7p-60}{p^2+p-20} \div \frac{p^2-6p-72}{p^2+2p-24}$

i) $\frac{a}{a^2-a-12} + \frac{3}{a^2+7a+12}$

j) $\frac{a^2-2a}{a^2-4} - \frac{7}{a^2+11a+18}$

k) $\frac{8r+tr+8t+t^2}{t^2+16t+63} \div \frac{t^2+17t+72}{t^3+343}$

l) $\frac{a+1}{a^2+4a-21} + \frac{a^2-36}{a^2+a-42}$