HSC STYLE HOMEWORK

NAME: .....

SEMINAR DAY & TIME: .....

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Steps Mathematics

FRACTIONS & EQUATIONS

General Instructions

- Reading time – 5 minutes
- Working time – 60 minutes.
- Write using black or blue pen
- Draw diagrams in pencil
- Board-approved calculators may be used
- Approved data sheets and periodic tables may be used
- All necessary working should be shown in every question

ALGEBRAIC FRACTIONS

Simplify the following fractions. (You may leave the denominator unexpanded)

a) $\frac{x}{x-x^2}$

b) $\frac{x+1}{1-x} - \frac{x}{x-x^2}$

c) $\frac{2}{x+1} - \frac{1}{x}$

d) $\frac{2}{x} + \frac{1}{x^2+1}$

e) $\frac{2}{x-2}+\frac{1}{x+3}$

f) $\frac{1}{x+4}-\frac{x}{x-1}$

g) $\frac{x}{(x-1)(x+3)}+\frac{3}{x-1}$

h) $\frac{2x}{x^2-4}+\frac{2}{x+2}-\frac{x}{x-2}$

Simplify the following fractions

a) $\frac{(x+1)(x-2)}{x^2} \div \frac{x-2}{x(x-1)}$

b) $\frac{(x-4)(x+2)}{x^2-x} \times \frac{x-1}{x^2+2x}$

c) $\frac{x+1}{x^2-x} \div \frac{x^3+1}{(x-1)^2}$

d) $\frac{x^2-9}{(x+2)(x+5)} \times \frac{x^2+5x}{(x+3)(x-2)}$

Express the following without compound fractions and simplify

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

b) $\frac{1+\frac{1}{x-1}}{x+1}$

c) $\frac{\frac{x}{x+2}-1}{x-2}+\frac{1}{x+2}$

SIMULTANEOUS EQUATIONS

Solve the following simultaneous equations using substitution

a) $x - y = 4$ and $x + y = 8$

b) $x + 2y = 5$ and $2x - 3y = -4$

c) $y = x - 5$ and $y = 3x + 1$

d) $2x + y = 1$ and $2x - y = -5$

Solve the following simultaneous equations using elimination

a) $3x - y = -1$ and $2x + y = -4$

b) $3x - 2y = 10$ and $2x + 4y = -4$

c) $x + 2y = 2$ and $x - 3y = 7$

d) $2x - 3y = -18$ and $3x + 2y = -1$