Unit 8 · Algebraic Fraction

HARDER WORKSHEET

Full marks 26

Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 26

1 Cancel first [3]

Simplify. Show your working.

$$\frac{x^3 - 8}{x^2 + 2x + 4} + \frac{x^3 + 8}{x^2 - 2x + 4}$$

Answer: _____

2 Telescoping [3]

Simplify. Show your working.

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

Answer: _____

3 Signs turned round [3]

Simplify. Show your working.

$$\frac{a}{(a-b)(a-c)} + \frac{b}{(b-c)(b-a)} + \frac{c}{(c-a)(c-b)}$$

Answer: _____

4 Work backwards [3]

Answer the following question. Show your working.

Find p and q if $\frac{p}{x+3} + \frac{q}{x-2} = \frac{5x}{x^2+x-6}$.

Answer: _____

5 A real setting [4]

Solve the following problem. Show your working.

A truck carries tea from Ilam to Birtamod at u km/h and comes back empty at v km/h. Show that its average speed for the round trip is $\frac{2uv}{u+v}$. Find it for $u = 30$, $v = 50$, and say whether the length of the road matters.

Answer: _____

6 Spot the error [3]

Find the mistakes in the working and correct them.

Gita simplified: $\frac{x+1}{x-1} - \frac{x-1}{x+1} = \frac{(x+1)^2 - x - 1^2}{x^2-1} = \frac{x^2+x}{x^2-1}$.

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https://science-playground.com/learn/grade-10-math/algebraic-fraction

7 Is the claim true? [2]

Answer the following question. Give a reason.

Mohan says $\frac{x+6}{x+3} = 2$ because "6 is twice 3". Find one value of x that proves him wrong, and the only value for which he is right.

8 Show it [3]

Answer the following question.

Show that $\frac{1}{a^2+a+1} - \frac{1}{a^2-a+1} + \frac{2a}{a^4+a^2+1} = 0$.

9 Make your own [2]

Answer the following question.

Write two algebraic fractions with different denominators whose sum is $\frac{2x}{x^2-1}$. Show that your sum is right.