A218 Algebraic fractions

Q1.

Solve $\frac{4x-1}{5} + \frac{x+4}{2} = 3$

x = ...

(Total for Question is 3 marks)

Q2.

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

x = ...

(Total for question = 4 marks)

Q3.

Solve $\frac{4-2x}{x+1} = x$

.....

(Total for Question is 4 marks)

Q4.

(a) Solve $x^2 + 2x - 35 = 0$

.....

(3)

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

Give your solutions as surds.

.....

(4)

(Total for question = 7 marks)

Q5.

(a) Solve $\frac{9+x}{7} = 11 - x$

x = ...

(3)

(b) Simplify $\frac{4(y+3)^3}{(y+3)^2}$

.....

(1)

(Total for question = 4 marks)

Q6.

Show that $\frac{a}{b+1} - \frac{a}{(b+1)^2}$ can be written as $\frac{ab}{(b+1)^2}$

(Total for question = 2 marks)

Q7.

$x^2 - 9y^2 = 0$ where $x > 0$ and $y > 0$

(a) Work out the ratio $x : y$

.....

(3)

(b) Simplify fully $\dfrac{3 - 4x - 4x^2}{2x^2 - 7x + 3}$

.....

(3)

(Total for question = 6 marks)

Q8.

Write

$$4 - \left[(x+3) \div \frac{x^2 + 5x + 6}{x - 2} \right]$$

as a single fraction in its simplest form.
You must show your working.

.....

(Total for question is 4 marks)

Q9.

Show that $\frac{3x+6}{x^2-3x-10} \div \frac{x+5}{x^3-25x}$ simplifies to ax where a is an integer.

(Total for question = 4 marks)

Q10.

Show that $\frac{1}{6x^2+7x-5} \div \frac{1}{4x^2-1}$ simplifies to $\frac{ax+b}{cx+d}$ where a, b, c and d are integers

.....

(Total for question = 3 marks)

Q11.

(a) Write $\frac{4x^2-9}{6x+9} \times \frac{2x}{x^2-3x}$ in the form $\frac{ax+b}{cx+d}$ where *a*, *b*, *c* and *d* are integers.

.....

(3)

(b) Express $\frac{3}{x+1} + \frac{1}{x-2} - \frac{4}{x}$ as a single fraction in its simplest form.

.....

(3)

(Total for question = 6 marks)

Q12.

Show that $6 + \left[(x+5) \div \frac{x^2 + 3x - 10}{x - 1} \right]$ simplifies to $\frac{ax - b}{cx - d}$ where *a*, *b*, *c* and *d* are integers.

(Total for question = 4 marks)

Q13.

Given that

$$2x - 1 : x - 4 = 16x + 1 : 2x - 1$$

find the possible values of x.

.....

(Total for question = 5 marks)

Q14.

Solve $\frac{3x-2}{4} - \frac{2x+5}{3} = \frac{1-x}{6}$

x = ...

(Total for question = 4 marks)

Q15.

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

x = ...

(Total for question is 3 marks)