OPERATIONS ON ALGEBRAIC FRACTIONS: PRETEST A

MTH-4110-1

Name:

Date:

Duration: 2 hours 30 minutes

Question 1 (10 marks)

Reduce the following algebraic fraction to lowest terms. Show all the steps in the solution.

$$\frac{-2b^2 + 11b - 15}{15b - 6b^2}$$

Question 2 (10 marks)

Determine the product of the following algebraic fractions and reduce the result to lowest terms. Show all the steps in the solution.

$$\frac{-x^4 + 36}{6x - 24} \bullet \frac{3x^3 + 6x^2 + 12x + 24}{x^4 - 2x^2 - 24} \bullet \frac{x^4 - 4x^3}{x^5 + 6x^3}$$

Question 3 (10 marks)

Perform the following operations and reduce the result to lowest terms. Show all the steps in the solution.

$$\frac{b^2 - 9a^2}{9 - 6a + a^2} \cdot \frac{9 - a^2}{3b + ab - 9a - 3a^2} \div \frac{4(b + 3a)}{3(3 - a)}$$

Question 4 (10 marks)

Divide the following algebraic fractions and reduce the result to lowest terms. Show all the steps in the solution.

$$\frac{6x - 9x^2}{3x^2 - 5xy + 2y^2} \div \frac{3x^3 - 2x^2}{xy - x^2}$$

Question 5 (10 marks)

Perform the following operations and reduce the result to lowest terms. Show all the steps in the solution.

$$\frac{x+3}{2x^2+7x+3} - \frac{2x-1}{x^2+4x+4} - \frac{x+2}{2x^2+5x+2}$$

Question 6 (15 marks)

Reduce the following algebraic expressions to lowest terms, making sure to observe the order of operations. Show all the steps in the solution.

$$\left(1 + \frac{2x - y}{2x + y}\right) \div \frac{x}{4x^2 + 4xy + y^2}$$

Question 7 (15 marks)

Reduce the following algebraic expressions to lowest terms, making sure to observe the order of operations. Show all the steps in the solution.

$$\frac{-h^2 + 3gh - 2g^2}{-h^2} \div \left(\frac{2g}{h^2} - \frac{3}{h} + \frac{1}{g} \right)$$

Question 8 (20 marks)

Reduce the following algebraic expressions to lowest terms, making sure to observe the order of operations. Show all the steps in the solution.

$$\frac{4x^2}{4x^2 - y^2} - \frac{x^3}{x - y} \circ \frac{3x^2 - 4xy + y^2}{3x^4 - x^3 y}$$

OPERATIONS ON ALGEBRAIC FRACTIONS: PRETEST B
MTH-4110-1

Name:

Date:

Duration: 2 hours 30 minutes

Question 1 (10 marks)

Reduce the following algebraic fraction to lowest terms. Show all the steps in the solution.

$$\frac{-x^2 + 7x - 12}{9 - x^2}$$

Question 2 (10 marks)

Divide the following algebraic fractions and reduce the result to lowest terms. Show all the steps in the solution.

$$\frac{4g^2 - 25h^2}{5g - 10g^2} \div \frac{5h - 2g}{2g^2 - g}$$

Question 3 (10 marks)

Perform the following operations and reduce the result to lowest terms. Show all the steps in the solution.

$$\frac{4}{8-6x+x^2} + \frac{2}{8+2x-x^2} - \frac{2}{8-2x^2}$$

Question 4 (10 marks)

Determine the product of the following algebraic fractions and reduce the result to lowest terms. Show all the steps in the solution.

$$\frac{-2+g+g^2}{3g^2+12g-4fg-16f} \cdot \frac{4g-3f}{g^2-g^3} \cdot \frac{-3g^4-12g^3}{2g+g^2}$$

Question 5 (10 marks)

Perform the following operations and reduce the result to lowest terms. Show all the steps in the solution.

$$\frac{9-x^2}{x^3+2x^2y} \circ \frac{x^2-4y^2}{x-3} \div \frac{x^2-2xy+3x-6y}{2x}$$

Question 6 (15 marks)

Reduce the following algebraic expressions to lowest terms, making sure to observe the order of operations. Show all the steps in the solution.

$$\left(\frac{4x}{x+1} - 2 + \frac{1}{x} \right) \circ \frac{2x^2 + 2x}{4x - 4 - 8x^2}$$

Question 7 (15 marks)

Reduce the following algebraic expressions to lowest terms. making sure to observe the order of operations. Show all the steps in the solution.

$$\left(\frac{b^2 + 3b + 2}{b+1} - 1 - \frac{b+a}{b} \right) \div \frac{b^4 - ab^2}{b^3}$$

Question 8 (20 marks)

Reduce the following algebraic expressions to lowest terms, making sure to observe the order of operations. Show all the steps in the solution.

$$\frac{8a^2 + 16a + 6}{2a^2 + 5a + 3} + \frac{a^3 + a^2 - 6a}{3 - 2a - a^2} \cdot \frac{4a}{a^2 - a - 2}$$

OPERATIONS ON ALGEBRAIC FRACTIONS: PRETEST C
MTH-4110-1

Name:

Date:

Duration: 2 hours 30 minutes

Question 1 (10 marks)

Reduce the following algebraic fraction to lowest terms. Show all the steps in the solution.

$$\frac{-x^2 + 4x - 3}{1 - x^2}$$

Question 2 (10 marks)

Determine the product of the following algebraic fractions and reduce the result to lowest terms. Show all the steps in the solution.

$$\frac{-3 - 2x + x^2}{2x^2 - 3xy + 4x - 6y} \bullet \frac{3x - 2y}{x^2 - 3x} \bullet \frac{-2x^2 - x^3}{x^2 + x}$$

Question 3 (10 marks)

Perform the following operations and reduce the result to lowest terms. Show all the steps in the solution.

$$\frac{4-x^2}{2x^2+xy} \cdot \frac{4x^2-y^2}{x-2} \div \frac{2x^2+4x-2y-xy}{2x^2}$$

Question 4 (10 marks)

Divide the following algebraic fractions and reduce the result to lowest terms. Show all the steps in the solution.

$$\frac{9a^2-16b^2}{3a^2-9a^3} \div \frac{4b-3a}{3a^2-a}$$

Question 5 (10 marks)

Perform the following operations and reduce the result to lowest terms. Show all the steps in the solution.

$$\frac{3}{3-4t+t^2} + \frac{4}{3+2t-t^2} - \frac{2}{2-2t^2}$$

Question 6 (15 marks)

Reduce the following algebraic expressions to lowest terms, making sure to observe the order of operations. Show all the steps in the solution.

$$\left(\frac{g}{g+3} + 2 - \frac{1}{g} \right) \cdot \frac{12+4g}{6g^2+10g-6}$$

Question 7 (15 marks)

Reduce the following algebraic expressions to lowest terms. making sure to observe the
order of operations. Show all the steps in the solution.

$$\left(\frac{f^2 + 7f + 12}{f + 4} - 1 - \frac{2f + h}{f} \right) \div \frac{f^3 - fh}{f}$$

Question 8 (20 marks)

Reduce the following algebraic expressions to lowest terms. making sure to observe the order of operations. Show all the steps in the solution.

$$\frac{3b^2 + 7b - 6}{b^2 + 5b + 6} + \frac{3b(b+1)(b-2)}{2 + b - b^2} \cdot \frac{b}{b^2 - 4}$$

OPERATIONS ON ALGEBRAIC FRACTIONS: PRETEST D
MTH-4110-1

Name:

Date:

Duration: 2 hours 30 minutes

Question 1 (10 marks)

Reduce the following algebraic fraction to lowest terms. Show all the steps in the solution.

$$\frac{-2f^2 + 9f - 4}{4f - 8f^2}$$

Question 2 (10 marks)

Divide the following algebraic fractions and reduce the result to lowest terms. Show all the steps in the solution.

$$\frac{8x - 6x^2}{6x^2 - 11xy + 4y^2} \div \frac{3x^4 - 4x^3}{x^2y - 2x^3}$$

Question 3 (10 marks)

Perform the following operations and reduce the result to lowest terms. Show all the steps in the solution.

$$\frac{b+5}{2b^2+13b+15} - \frac{2b-3}{b^2+8b+16} - \frac{b+4}{2b^2+11b+12}$$

Question 4 (10 marks)

Determine the product of the following algebraic fractions and reduce the result to lowest terms. Show all the steps in the solution.

$$\frac{-x^4+9}{3x-15} \cdot \frac{2x^3+10x^2+8x+40}{x^4+x^2-12} \cdot \frac{x^3-5x^2}{x^5+3x^3}$$

Question 5 (10 marks)

Perform the following operations and reduce the result to lowest terms. Show all the
steps in the solution.

$$\frac{f^2 - 25d^2}{25 - 10d + d^2} \cdot \frac{25 - d^2}{5f - 25d + fd - 5d^2} \div \frac{10d + 2f}{25 - 5d}$$

Question 6 (15 marks)

Reduce the following algebraic expressions to lowest terms, making sure to observe the order of operations. Show all the steps in the solution.

$$\left(1 + \frac{x - 2y}{x + 2y} \right) \div \frac{x}{x^2 + 3xy + 2y^2}$$

Question 7 (15 marks)

Reduce the following algebraic expressions to lowest terms, making sure to observe the order of operations. Show all the steps in the solution.

$$\frac{4y^2 - x^2}{-2xy} \div \left(\frac{2x}{y^2} - \frac{5}{y} + \frac{2}{x} \right)$$

Question 8 (20 marks)

Reduce the following algebraic expressions to lowest terms. making sure to observe the order of operations. Show all the steps in the solution.

$$\frac{2a^2 - 4b^2}{a^2 - 4b^2} - \frac{a^3 - a^2b}{2a - b} \cdot \frac{2a^2 - 5ab + 2b^2}{a^4 - 3a^3b + 2a^2b^2}$$