

FACTORIZING AND ALGEBRAIC FRACTIONS PRETEST
MTH-4106-1

Name:

Date:

Duration: 2 hours 30 minutes

1. Factor the following polynomial. (5 marks)

$$30a^5b^5 - 24a^4b^4 + 6a^2b^3 - 18a^3b^5 + 12a^7b^9 - 6a^3b^4$$

2. Factor the following polynomial. (5 marks)

$$a^2 - 13a - 30$$

3. Factor the following polynomial. (5 marks)

$$3x^2 - 10xy + 8y^2$$

4. Factor the following polynomial. (5 marks)

$$169 - 1.96a^2$$

5. Factor the following polynomial completely.
Show all the steps in the solution. (5 marks)

$$-5a^3b + 26a^2b^2 - 5ab^3$$

6. Factor the following polynomial completely.
Show all the steps in the solution. (5 marks)

$$4p^3x - 4x - y + 20q^4x + p^3y + 5q^4y$$

7. Factor the following polynomial completely.
Show all the steps in the solution. (5 marks)

$$25x^2 - 225y^4$$

8. Express the quotient of the following algebraic fractions in lowest terms.
Show all the steps in the solution. (10 marks)

$$\frac{9 - y^2}{y^2 + 9} \div (x^2y^2 - 9x^2)$$

9. Reduce the following algebraic fraction to its lowest terms.
Show all the steps in the solution. (5 marks)

$$\frac{36a^2 - b^8}{6ab^8 - 36a^2b^4}$$

10. Express the difference of the following two algebraic fractions in lowest terms.
Show all the steps in the solution. (10 marks)

$$\frac{8}{m+4} - \frac{m+4}{m}$$

11. Express the product of the following two algebraic fractions in lowest terms. Show all the steps in the solution. (10 marks)

$$\frac{36 - m^2}{m} \times \frac{6m - 24}{-36m - 6m^2}$$

12. Express the sum of the following two algebraic fractions in lowest terms. Show all the steps in the solution. (10 marks)

$$\frac{b^2}{3b^2 + b} + \frac{2 - b}{3b}$$

13. The following two algebraic fractions are equivalent. Demonstrate their equivalence by transforming the expression on the left side. Show all the steps in the solution. (10 marks)

$$\frac{-t^2 - t + 20}{t^2 + 5t} + \frac{t}{t + 4} = \frac{16}{t^2 + 4t}$$

14. The following two algebraic expressions are equivalent. This time, demonstrate their equivalence by transforming both expressions. Show all the steps in the solution. (10 marks)

$$\frac{(a^2 - 9)}{a^2 + a - 12} - \frac{(b^2 - 1)}{(b+1)^2} = \frac{-1}{b+1} + \frac{-b+11+3a}{ab+4b+a+4}$$