

Name _____ Student No. _____ G ____/____ Date: _____ Score: _____
Nickname: _____ Quiz No.: _____

Factoring using Mixed Methods

A. Factor completely the given polynomial expressions.

1) $-x^6 - 19x^3 + 216$

2) $-27x^5 + 27x^3 + 8x^2 - 8$

Factored Form:

$$-(x-2)(x+3)(x^2-3x+9)(x^2+2x+4)$$

Factored Form:

$$-(x-1)(x+1)(3x-2)(9x^2+6x+4)$$

Remainder Theorem

B. Give the remainder of each of the following expressions using remainder theorem.

1) $(4x^5 + 6x^4 - 8x^3 - 12x^2 + 4x + 6) \div (-2x - 3)$

2) $(-4x^5 - 4x^4 + 27x^3 + 4x^2 - 17x - 6) \div (2x - 2)$

Remainder: 4950

Remainder: 0

Factor Theorem

C. State if the given binomial is a factor of the given polynomial.

1) $(-2x^5 - x^4 + 18x^3 + 17x^2 - 20x - 12) \div (2 - 2x)$

2) $(-2x^5 - 10x^4 - 20x^3 - 20x^2 - 10x - 2) \div (2x - 2)$

Answer: Factor

Answer: Not a Factor

Rational Root Theorem

D. Identify the nature of the roots (table of variations), the number of roots (FTA), possible roots, actual roots and the factored form of the given polynomial.

1) $f(x) = x^3 + 7x^2 + 16x + 12$

2) $f(x) = -2x^4 - 14x^3 - 34x^2 - 34x - 12$

FTA: Atmost 3
Factored form: $(x + 2)^2 (x + 3)$
Actual roots: -3, -2 mul. 2

FTA: Atmost 4
Factored form: $-2 (x + 1)^2 (x + 2) (x + 3)$
Actual roots: -3, -2, -1 mul. 2