2) \( (m^4 - 3m^2 + m + 4) \div (m - 1) \)

3) \( (x^3 + 3x^2 - 4) \div (x + 2) \)

Note: If the remainder when dividing a polynomial by \( (x - a) \) is 0, then \( (x - a) \) is a factor of the polynomial.

Example: Divide \( P(x) = 3x^3 + 14x^2 + 13x - 6 \) by \( (x + 3) \) then factor \( P(x) \) completely.

Homework problems:

Use synthetic division to divide:

1) \( (3x^3 - x^2 + 2x + 5) \div (x + 2) \)

2) \( (y^4 - 2y^3 - 7y - 6) \div (y - 3) \)

3) \( (m^5 - 1) \div (m - 1) \)