

Factor the following polynomials using synthetic/long division given one of its factors.

1. $x^3 + 2x^2 - 5x - 6$ if $(x + 1)$ is a factor

2. $x^3 - x^2 - 16x - 20$ if $(x + 2)$ is a factor

3. $8x^3 - 55x^2 + 44x - 12$ if $(x - 6)$ is a factor

4. $x^4 - 4x^3 - 7x^2 + 34x - 24$ if $(x^2 + 2x - 3)$ is a factor