

U2 Day 5 Warm Up

- 15 Shown below are four polynomial functions, each written in expanded standard form and as a product of linear factors.

$$f(x) = x^4 - 10x^3 + 35x^2 - 50x + 24 = (x - 1)(x - 2)(x - 3)(x - 4)$$

$$g(x) = x^4 - 7x^3 + 17x^2 - 17x + 6 = (x - 1)^2(x - 2)(x - 3)$$

$$h(x) = x^4 - 5x^3 + 9x^2 - 7x + 2 = (x - 1)^3(x - 2)$$

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

- In which form is it easier to see the zeroes of the function?
- In which form is it easier to see the y -intercept of the graph of the polynomial function?
- How many zeroes do each of the four quartic polynomial functions have?
- How does the collection of four functions help to explain why any polynomial function of degree n can have at most n distinct zeroes?