Graphs of Polynomials: Discovering Zeroes

Factor each polynomial completely. Then, type the factored form into the graph at desmos.com and graph the function on the right hand side of the paper. Click on the x-intercepts to find the exact coordinates.

1. $f(x) = x^2 + x - 20$

Factored form:

x-intercepts:

2. $f(x) = x^2 - 4x + 3$

Factored form:

x-intercepts:

3. $f(x) = x^2 + 8x + 12$

Factored form:

x-intercepts:

4. $f(x) = x^3 + 6x^2 + 11x + 6$

Factored form: $(x + 1)(x^2 + 5x + 6)$

x-intercepts:

5. $f(x) = x^3 - 4x$

Factored form:

x-intercepts:

6. $f(x) = x^3 + 4x^2 - 21x$

Factored form:

x-intercepts:

7. $f(x) = x^3 - 7x^2 - 9x + 63$

Factored form: $(x - 7)(x^2 - 9)$

x-intercepts:

8. $f(x) = x^2 - 6x + 9$

Factored form:

x-intercepts:

9. $f(x) = 4x^2 - 64$

Factored form:

x-intercepts:

10. $f(x) = x^4 - 5x^2 + 4$

Factored form: $(x^2 - 1)(x^2 - 4)$

x-intercepts:

What do you notice about the pattern between the factors of the functions and the x-intercepts?