

▷. **Def.** A *theorem* is a true statement for which there a proof.

▶. The following Theorem A is about certain cubic equations.

Theorem A. Let $b \in \mathbb{R}$. If f is a cubic function of the form $f(x) = x^3 - x + b$ and $b > 1$, then the function f has exactly one x -intercept.

The following Theorem B is about x -intercepts of functions:

Theorem B. If f and g are functions with $g(x) = k \cdot f(x)$, where k is a nonzero real number, then f and g have exactly the same x -intercepts.

Using only Theorem A, Theorem B, and some simple algebraic manipulations, what can be concluded about the functions given by the following formulas? Justify (as if you are explaining to a confused fellow student) your answer using complete sentences.

1. $f(x) = x^3 - x + 7$
2. $h(x) = -x^3 + x - 5$. Hint: Rewrite h as $h(x) = -(x^3 - x + 5)$.
3. $F(x) = 2x^3 - 2x + 7$

.....

DELETE this whole sentence and THEN put your answer to ALL parts down here.

- 1.
- 2.
- 3.