

MTH 30 LECTURE NOTES (Ojakian)

Topic 10: Power Functions

OUTLINE

(References: 3.3)

1. Power Functions
 2. End behavior
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1. Power Functions

- (a) $f(x) = kx^p$
- (b) Application. Section 3.3 - Exercise 66

2. End Behavior

- (a) Four cases: Even or Odd exponent, along with Positive or Negative coefficient.
- (b) Or: Use $+1$ or -1 as test point (only in power functions!)
- (c) Language: “goes to infinity” = “approaches infinity” = “ $x \rightarrow \infty$ ”
- (d) Arrow Notation and Limit Notation

3. Polynomial Function

- (a) Terms (or Monomials)
- (b) Degree
- (c) Leading Term and Leading Coefficient
- (d) Recall Local Extrema

4. Recall End Behavior

Just need leading term!

5. Intercepts

Also called “roots” or “zeroes”. Can use factoring to find.

Theorem 1. *A polynomial of degree n will have at most n intercepts, and at most $n - 1$ local extrema.*