

Exploring Polynomial Functions (3.1)

Math Learning Target:



"I can identify a polynomial function. I have learned many properties of polynomial functions today, and I can identify them when I am given any polynomial. I can apply what I have learned in familiar and unfamiliar settings."

Activity As a class, do *EXPLORE the Math* Page 124: A, B, C

Activity In a group, do only:
EXPLORE the Math Page 125: D*, E, F**, K, L

* use **desmos** and the table below.

** I have done a lot of this for you; use my tables on the next page.

Polynomial Function	Type	Sketch of Graph	Description of Graph	Domain and Range	Existence of Asymptotes?
$f(x) = x$	linear				
$f(x) = x^2$	quadratic				
$f(x) = x^3$	cubic				
$f(x) = x^4$	quartic				
$f(x) = x^5$	quintic				

Study this answer for "F":

E.

$f(x) = x$	Δ_1
$f(-3) = -3$	
$f(-2) = -2$	1
$f(-1) = -1$	1
$f(0) = 0$	1
$f(1) = 1$	1
$f(2) = 2$	1
$f(3) = 3$	1

$f(x) = x^2$	Δ_1	Δ_2
$f(-3) = 9$		
$f(-2) = 4$	-5	
$f(-1) = 1$	-3	2
$f(0) = 0$	-1	2
$f(1) = 1$	1	2
$f(2) = 4$	3	2
$f(3) = 9$	5	2

$f(x) = x^3$	Δ_1	Δ_2	Δ_3
$f(-3) = -27$			
$f(-2) = -8$	19		
$f(-1) = -1$	7	-12	
$f(0) = 0$	1	-6	6
$f(1) = 1$	1	0	6
$f(2) = 8$	7	6	6
$f(3) = 27$	19	12	6

$f(x) = x^4$	Δ_1	Δ_2	Δ_3	Δ_4
$f(-3) = 81$				
$f(-2) = 16$	-65			
$f(-1) = 1$	-15	50		
$f(0) = 0$	-1	14	-36	
$f(1) = 1$	1	2	-12	24
$f(2) = 16$	15	14	12	24
$f(3) = 81$	65	50	36	24

$f(x) = x^5$	Δ_1	Δ_2	Δ_3	Δ_4	Δ_5
$f(-3) = -243$					
$f(-2) = -32$	211				
$f(-1) = -1$	31	-180			
$f(0) = 0$	1	-30	150		
$f(1) = 1$	1	2	30	-120	120
$f(2) = 32$	31	30	30	0	120
$f(3) = 243$	211	180	150	120	