LTAA Alg 1

How do I write equations from Graphs?

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$(x-1)^1$ or x = crosses the axis

$(x-1)^{\text{even } (2,4,6,\ldots)}$ = bounce, double root

$(x-1)^{\text{odd} = (3,5,\ldots)}$ = wiggle

number of turns in a graph helps determine the degree

3rd degree, at most 2 turns

6th degree, at most 5 turns

Ex. 1

Predict: 3 turns - degree of 4

x-intercepts cross -1, -3 bounce 2

1. Identify roots: $y = \underline{a}(x+1)(x+3)(x-2)^2$

2. Put in Factored Form: $16 = a(1+1)(1+3)(1-2)^2$

3. Substitute for x and y: $16 = a(2)(4)(-1)^2$

4. Solve for a: $\frac{16}{8} = \frac{8a}{8}$

$2 = a$

5. Write equation: $y = 2(x+1)(x+3)(x-2)^2$

x y
(1, 16)