

Unit 2 Lesson 11: Finding Intersections

1 Math Talk: When f Meets g (Warm up)

Student Task Statement

Mentally identify a point where the graphs of the two functions intersect, if one exists.

$$f(x) = x \text{ and } g(x) = 3$$

$$j(x) = (x + 3)(x - 3) \text{ and } k(x) = 0$$

$$m(x) = (x + 3)(x - 3) \text{ and } n(x) = (x - 3)$$

$$p(x) = (x + 5)(x - 5) \text{ and } q(x) = (x + 3)(x - 3)$$

2 More Points of Intersection

Student Task Statement

For each pair of polynomials given, find all points of intersection of their graphs.

1. $c(x) = x^2 - 7$ and $d(x) = 2$

2. $f(x) = (x + 7)(x - 4)$ and $g(x) = x - 4$

3. $m(x) = (x + 7)(x - 4)$ and $n(x) = (2x + 5)(x - 4)$

4. $p(x) = (x + 1)(x - 8)$ and $q(x) = (x + 2)(x - 4)$

3 Graphing to Find Points of Intersection

Student Task Statement

Consider the functions $p(x) = 5x^3 + 6x^2 + 4x$ and $q(x) = 5640$.

1. Use graphing technology to find a value of x that makes $p(x) = q(x)$ true.
2. For the x -value at the point of intersection, what can you say about the value of $5x^3 + 6x^2 + 4x - 5640$?
3. What does your answer suggest is a possible factor of $5x^3 + 6x^2 + 4x - 5640$?
4.
 - a. Write your own polynomial $m(x)$ of degree 3 or higher.
 - b. Use graphing technology to estimate the values of x that make $m(x) = q(x)$ true.