Math 1050 ~ College Algebra

11 Polynomial Inequalities

Graphical Interpretations of Equations and Inequalities

EX 1

Given this graph of f(x) and g(x), determine the values of x for which each of these is true.

1a)

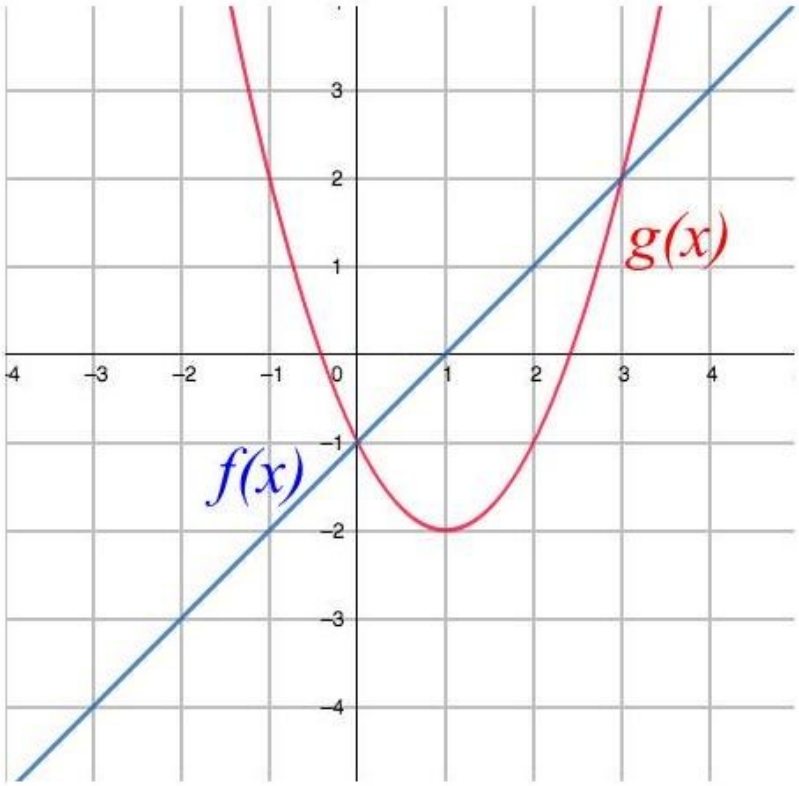
$f(x) = g(x)$

1b)

$f(x) < g(x)$

1c)

$f(x) > g(x)$



Analytical Solution of Polynomial Inequalities

EX 2

Given $f(x) = x^2 - 4$ and $g(x) = x + 2$, determine the values of x for which each of these is true by doing the math.

2a)

$f(x) = g(x)$

2b)

$f(x) < g(x)$

2c)

$f(x) > g(x)$

As the functions get more complicated, it is convenient to use a **sign line** to sort it out.

Directions for Using a Sign Line

a) Write the inequality as a function, f, with zero on the right side.

b) Determine the zeros of f and place them on a number line.

c)

d) Choose a test value in each of the intervals on the number line.

e) Determine the sign of f for each test value, writing that sign above that interval.

f) Your solution is the interval(s) that correspond to the inequality.

EX 3

Follow the steps above to solve these inequalities.

3a)

$x^2 + 2x > 3$

3b)

$-3x^2 - 2x \geq -x^2 + x - 2$

EX 4

Solve this inequality by each method.

4a)

Graphically $(x-1)^2 - 2 > -x^2 + 3$

4b)

Analytically $(x-1)^2 - 2 > -x^2 + 3$