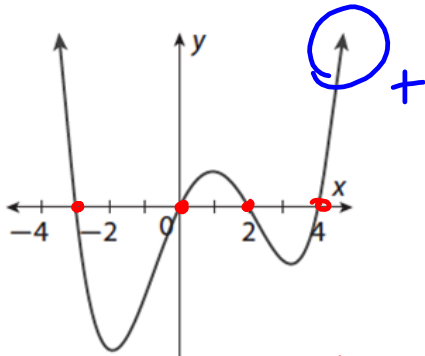


Write a quartic function in intercept form for the given graph, whose x -intercepts are integers. Assume that the constant factor a is either 1 or -1 .

16.

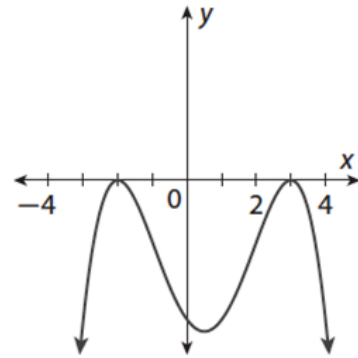


$$x = -3, 0, 2, 4$$

$$f(x) = + (x+3)(x)(x-2)(x-4)$$

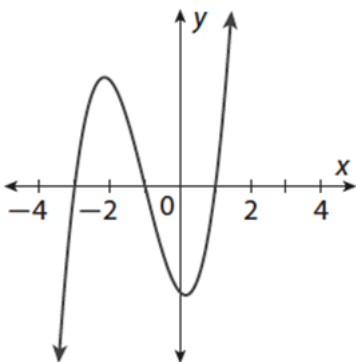
$$x(x+3)(x-2)(x-4)$$

17.

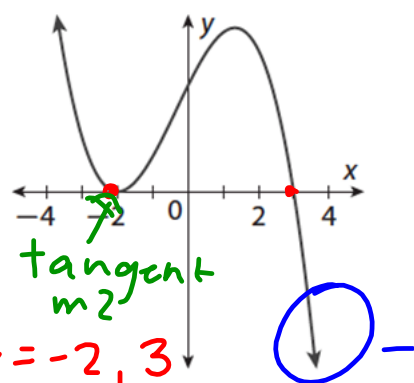


Write a cubic function in intercept form for the given graph, whose x -intercepts are integers. Assume that the constant factor a is either 1 or -1 .

14.



15.



$$x = -2, 3$$

$$f(x) = - (x+2)^2(x-3)$$

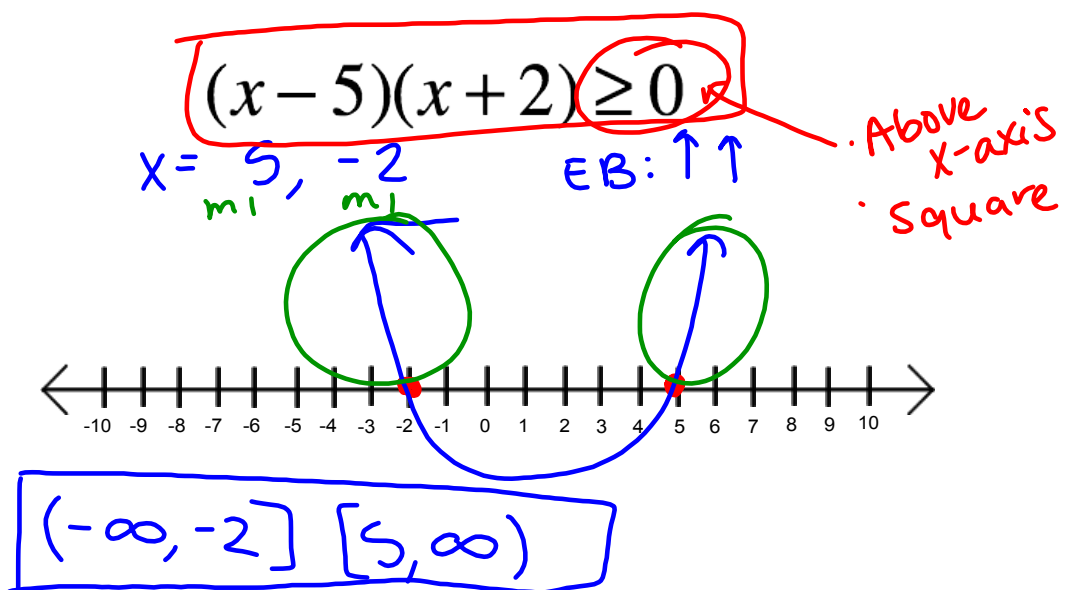
3-4 Solving Inequalities

Objective: Students can solve polynomial inequalities.

Use a calculator!

Recall from last year.

Solve the following inequalities. Graph your solution.
State your solution in set and interval notation.



Solving Inequalities for Polynomials

1. Find Boundary Points

2. Find Solution Intervals

Make a sign chart to be more efficient and use multiplicity rules and end behavior models.

Solving Inequalities

1. Graph function (look for zeros)

2. Determine if graph above or below
x-axis

> 0
Above
w/round

< 0
Below
w/round

≥ 0
Above
w/square

≤ 0
Below
w/square

3. Write the intervals

Key concepts

End behavior

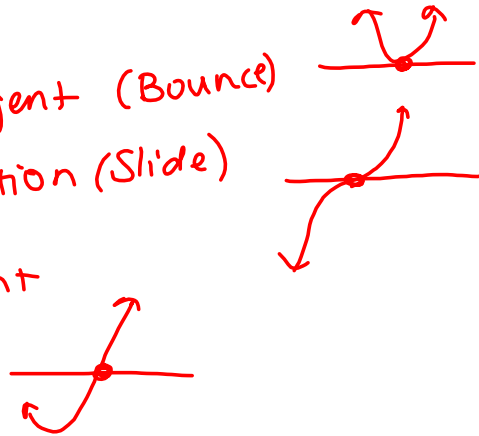
Degree {
Even:
Odd:

Multiplicity

Even \rightarrow Tangent (Bounce)

Odd \rightarrow Inflection (Slide)

1 \rightarrow Straight

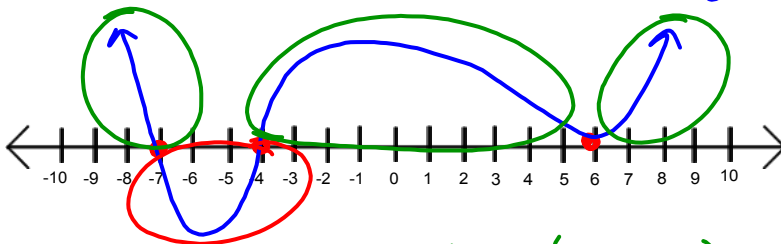


Determine the x-values that cause the polynomial to be a) zero b) positive c) negative

$$f(x) = (x+7)(x+4)(x-6)^2$$

a) $x = -7, -4, 6$
 m_1, m_1, m_2

EB: $\uparrow\uparrow$
LC: + (right \uparrow)
Deg: 4 (left match)



b) $(-\infty, -7) \cup (-4, 6) \cup (6, \infty)$

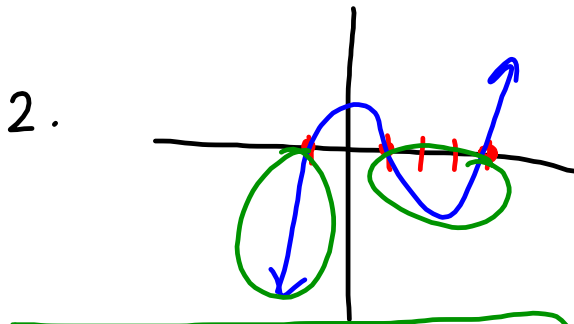
c) $(-7, -4)$

Solve the Polynomial Inequality

$$\underline{x^3 - 4x^2 - x + 4} \leq 0$$

1. Graph in calculator

*Below
w/ square*



$$(-\infty, -1] \cup [1, 4]$$

continued

Sign chart

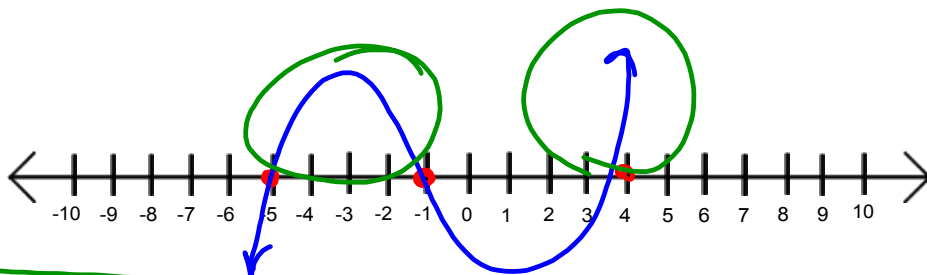


Solve the Polynomial Inequality

$$x^3 + 2x^2 - 19x - 20 > 0$$

EB ↓ ↑

Above w/round



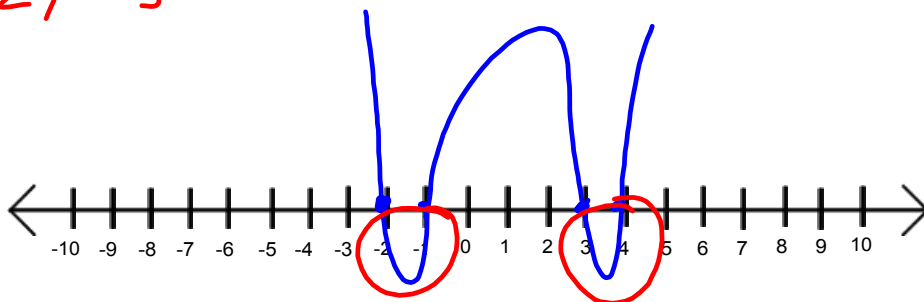
$$(-5, -1) \cup (4, \infty)$$

Solve the Polynomial Inequality

$$x^4 - 4x^3 - 7x^2 + 22x + 24 \leq 0$$

Below w/square

$$[-2, -1] \cup [3, 4]$$



Check for understanding:

1. Find where the polynomial is zero, positive, or negative

$$f(x) = (x + 3)(x + 1)^2(x - 4)^2$$