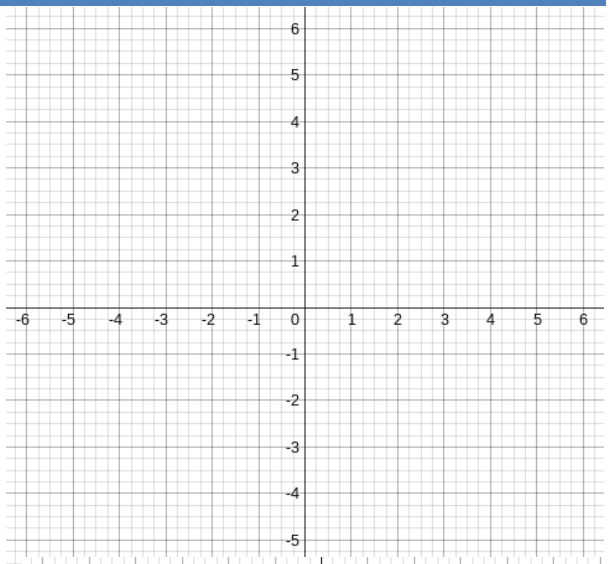
POLYNOMIAL FUNCTION EXPLORATION 2

Sketch a graph of each equation.



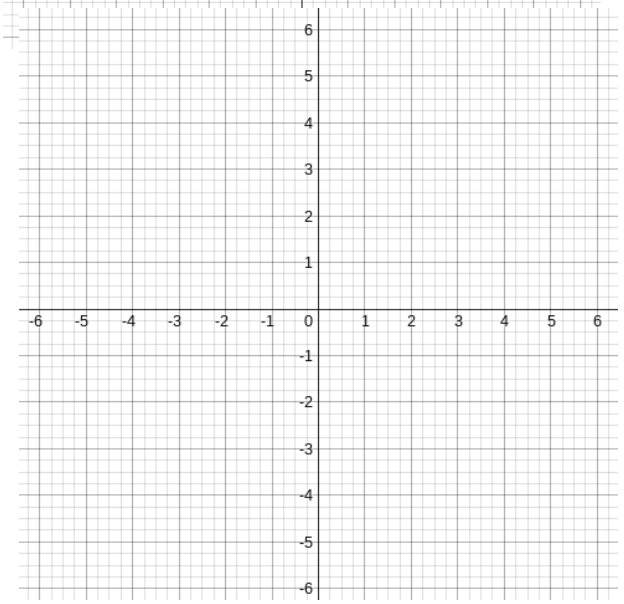
1. Sketch a graph of $f(x) = (x + 3)(x + 1)$
   If we were to multiply those factors, what exponent would x have? (Hint: You don't have to multiply it to find out.)
   How many times **could** this hit the x-axis?
   Would the leading coefficient be positive or negative?

   x-intercepts: _____

   As $x \to = -\infty, f(x) \to$ _____

   As $x \to \infty, f(x) \to$ _____

This problem had an exponent that was (even/odd).
The left and the right side of the graph go in (the same/opposite) direction(s).



2. Sketch a graph of $f(x) = (x + 3)(x + 1)(x - 1)$
   If we were to multiply those factors, what exponent would x have? (Hint: You don't have to multiply it to find out.)
   How many times **could** this hit the x-axis?
   Would the leading coefficient be positive or negative?

   x-intercepts: _____

   As $x \to = -\infty, f(x) \to$ _____

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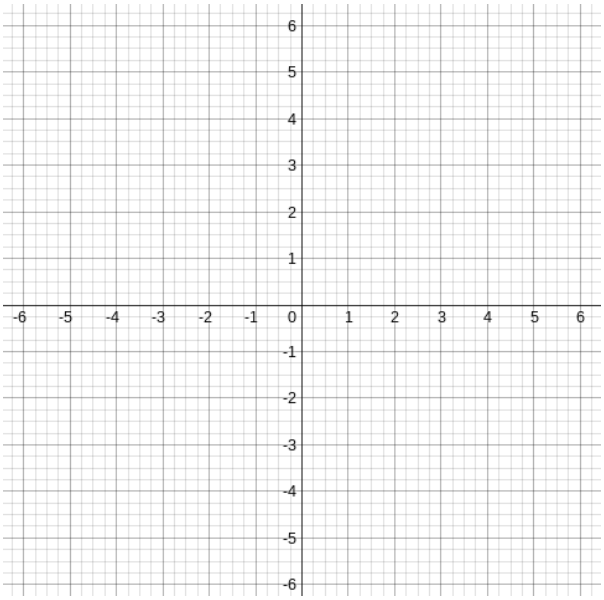

3. Sketch a graph of $f(x) = -x(x - 4)(x + 2)$
   If we were to multiply those factors, what exponent would x have? (Hint: You don't have to multiply it to find out.)
   How many times **could** this hit the x-axis?
   Would the leading coefficient be positive or negative?

   x-intercepts: _____

   As $x \to = -\infty, f(x) \to$ _____

   As $x \to \infty, f(x) \to$ _____

This problem had an exponent that was (even/odd).
The left and the right side of the graph go in (the same/opposite) direction(s).

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4. Sketch a graph of $f(x) = x^2(x+2)$

   If we were to multiply those factors, what exponent would x have? (Hint: You don't have to multiply it to find out.)

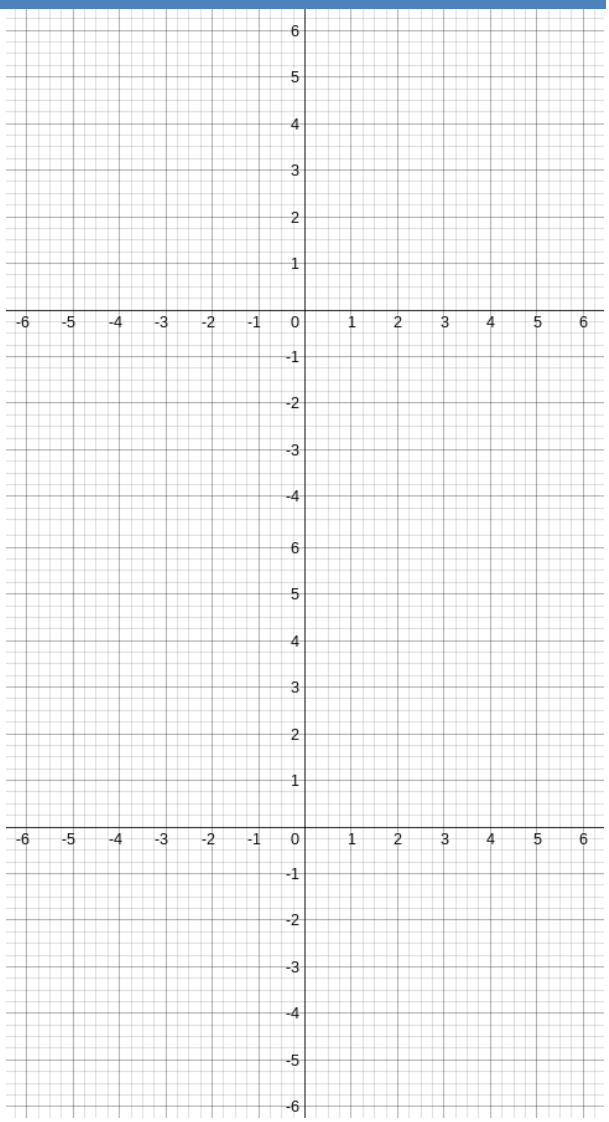
   How many times **could** this hit the x-axis?

   Would the leading coefficient be positive or negative?

   x-intercepts: _____

   As $x \to -\infty, f(x) \to$ _____

   As $x \to \infty, f(x) \to$ _____



This problem had an exponent that was (even/odd).
The left and the right side of the graph go in (the same/opposite) direction(s).

5. Sketch a graph of $f(x) = -x(x-4)(x-3)(x+1)$

   If we were to multiply those factors, what exponent would x have? (Hint: You don't have to multiply it to find out.)

   How many times **could** this hit the x-axis?

   Would the leading coefficient be positive or negative?

   x-intercepts: _____

   As $x \to -\infty, f(x) \to$ _____

   As $x \to \infty, f(x) \to$ _____

This problem had an exponent that was (even/odd).
The left and the right side of the graph go in (the same/opposite) direction(s).

6. Sketch a graph of $f(x) = x^2(x-4)^2$

   If we were to multiply those factors, what exponent would x have? (Hint: You don't have to multiply it to find out.)

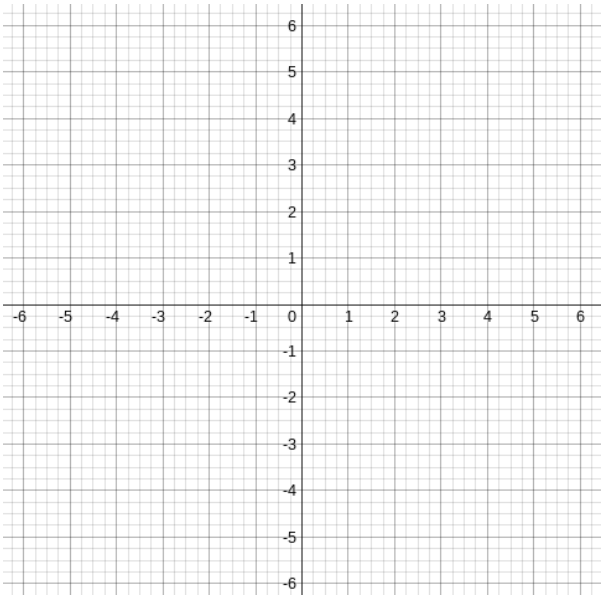
   How many times **could** this hit the x-axis?

   Would the leading coefficient be positive or negative?

   x-intercepts: _____

   As $x \to -\infty, f(x) \to$ _____

   As $x \to \infty, f(x) \to$ _____



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