Quiz 10

1. Consider the polynomial function $f(x) = -3x^3 - 3x^2 + 18x$.

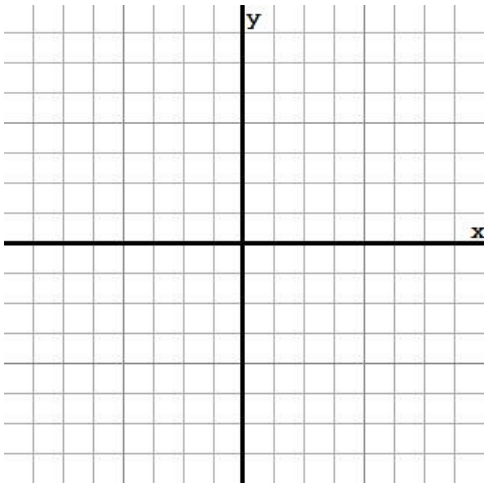
a. What is the maximum number of turning points this function can have? What is the maximum number of roots this function can have?

b. Find the y-intercept.

c. Find the roots. (Hint: Factor the polynomial. Be sure to look for common factors.)

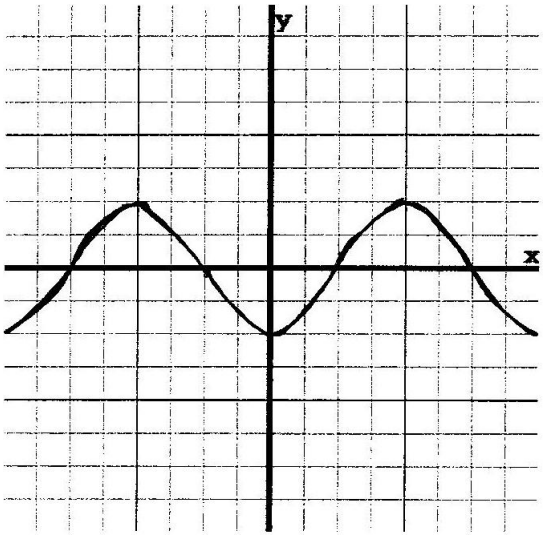
d. Describe the global behavior.

e. Sketch the graph of this function. Make sure your sketch agrees with the information you obtained in the previous parts.



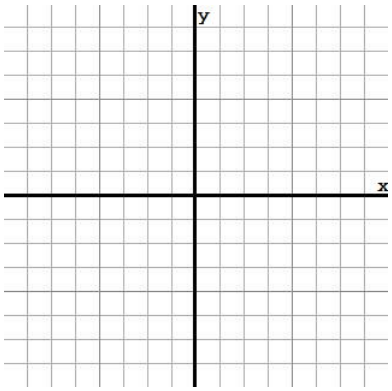
2. Construct a polynomial function with roots at $x = -2, 3$, and 4 passing through the point $(5, 21)$. Do not simplify your answer.

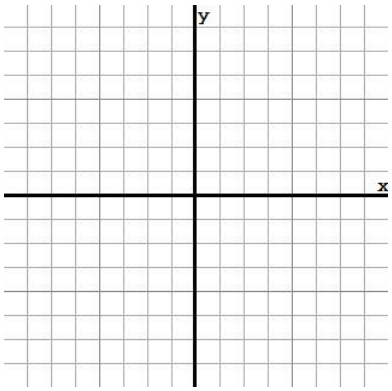
3. Suppose $f(x)$ has the following graph. (Assume that this pattern repeats forever.)

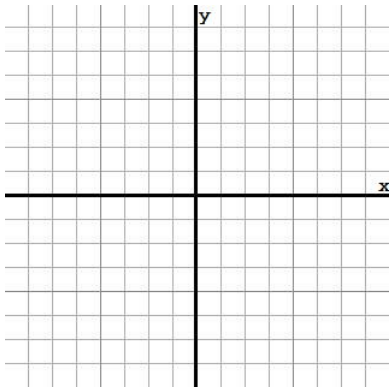


Sketch the graph of the following by applying transformations one at a time. At each step, write the equation (in terms of $f(x)$) of the function you are graphing.

a. $-3f(x+1)$







b. $\frac{1}{2}f(-x)+3$