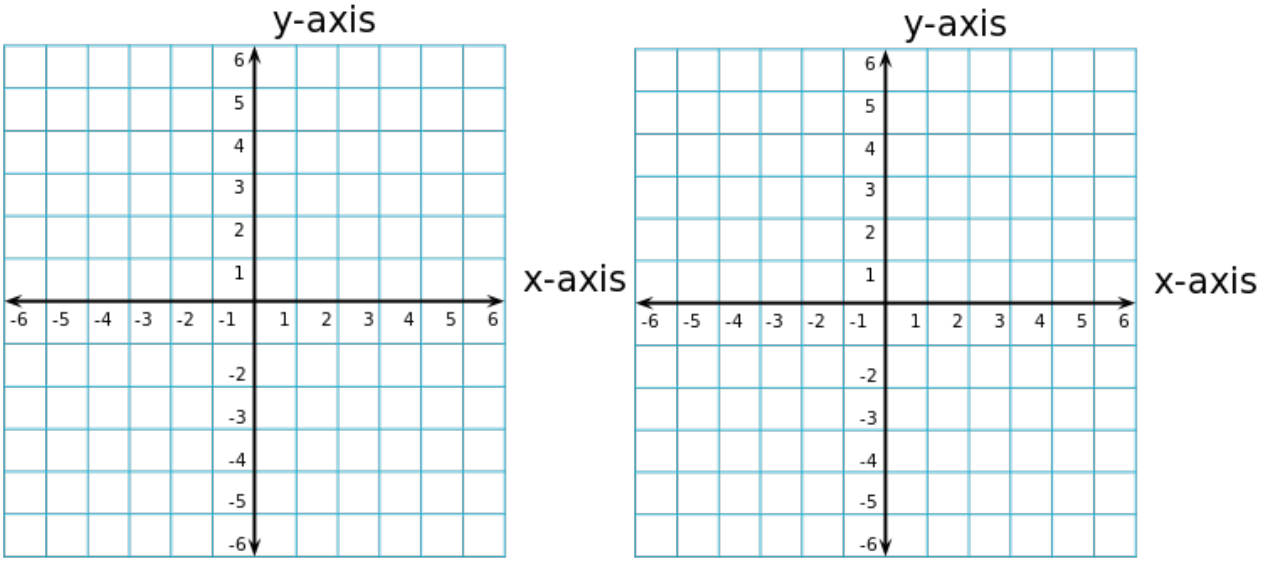
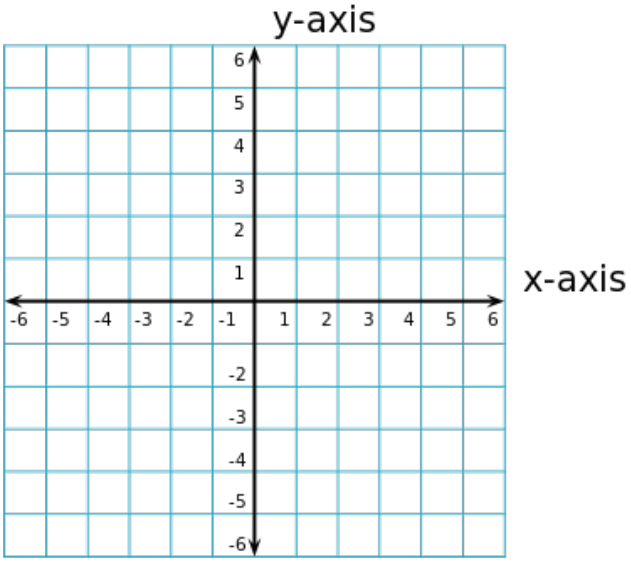
Math 1050-006 Midterm 2 Practice Test

1.) Suppose $g(x) = x^2$, what is $-4g(3x-7)+2$

2.) Given that $g(x) = x$ use graph transformations to graph $f(x) = g(x-3)$ and $h(x) = g(x)+2$



3.) Given that $f(x) = x^2$, $f: \mathbb{R} \to [0, \infty)$, both find and graph $f^{-1}(x)$



4.) Does $f(x) = x^2$, where $f: \mathbb{R} \to (-\infty, \infty)$ have an inverse? Justify why or why not using the ideas of onto and one-to-one.

5.) Find the inverse function for h(x) = $\frac{2x}{(5-3x)}$. *Assume the implied domain* $(x \neq \frac{5}{3})$

6.) If g(x) = $3\sqrt[4]{x+5}$, find the implied domain of g(x).

7.) Solve for when g(x) = $3\sqrt[4]{x+5} > 9$. i.e solve $3\sqrt[4]{x+5} > 9$ for x.

8.) $f(x)=(x-7)-(x^2+4x+3)$, $g(x)=(x^2+3x^3-7x)$ solve for $h(x)$, if $h(x)=f(x)*g(x)$. what is the degree and leading term of $h(x)$?

9.) Find the leading term of $5(x-3)(x-5)(x-6)(x^2+1)(2x+x^2-7)$

10.) Solve $\frac{10x^4-4x^3+5x-4}{x^2-3x}$ properly express your solution with a remainder if you find one.

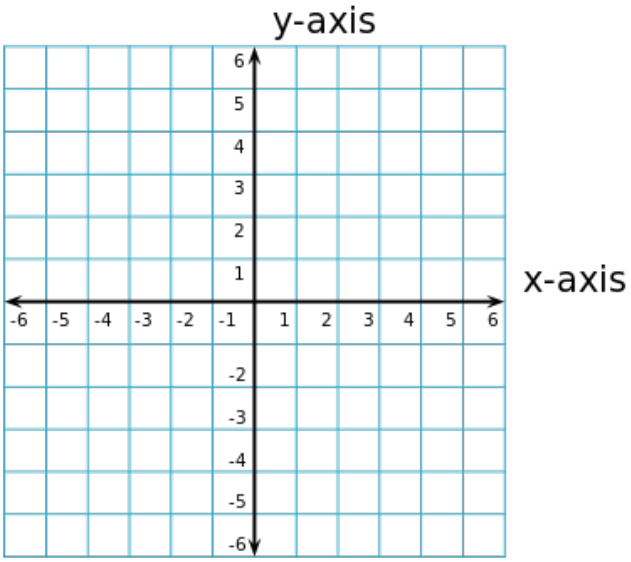
11.) Given that the number 1 is a root of the polynomial $p(x)=4x^4-3x^3+2x-3$
rewrite p(x) as the product of a linear and a cubic polynomial

12.) Give an upper and lower bound on the number of roots that the polynomial $p(x)= x^4 - 5x^5 + 3x^3 - \pi$ has and justify your answer

13.) How many roots can a constant polynomial have? What about a linear polynomial?

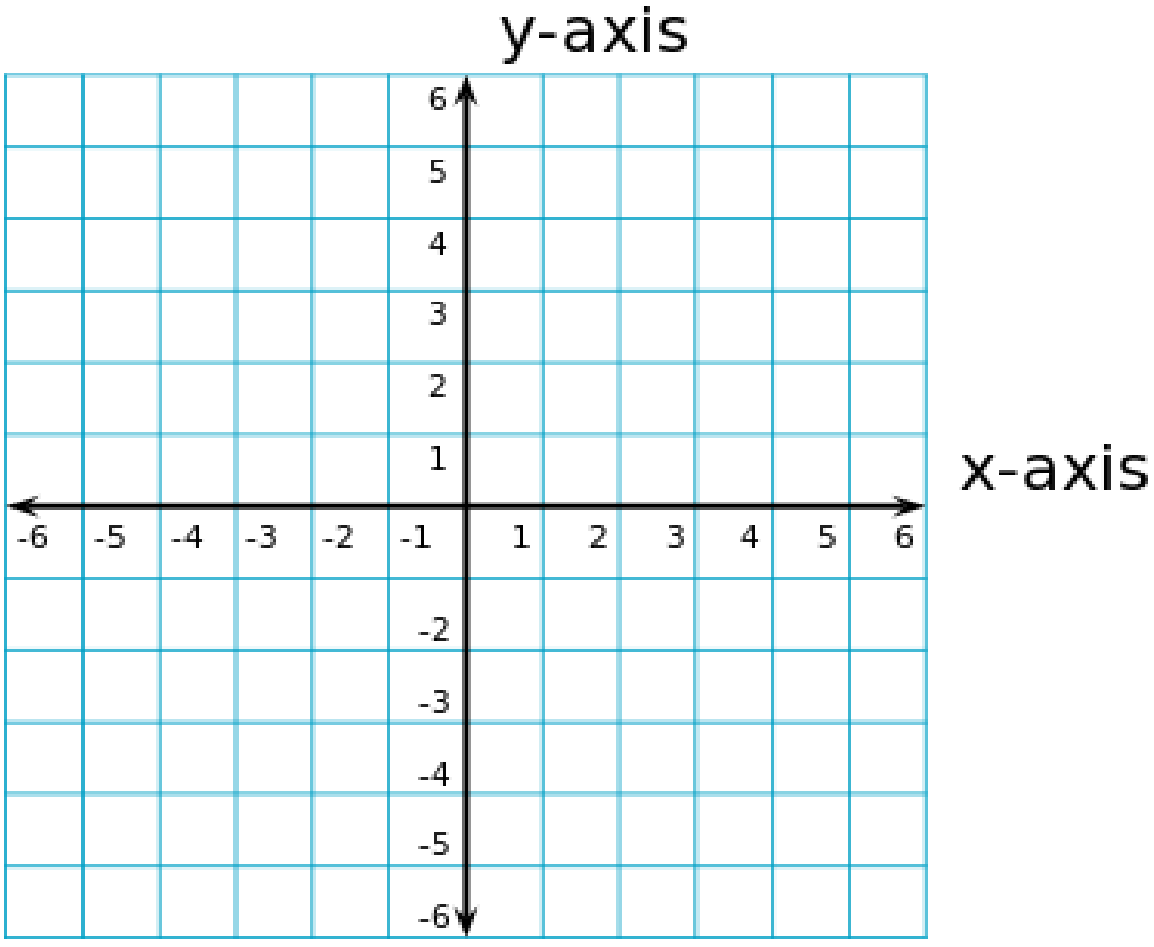
14.) Find the slope, x-intercept, and y-intercept of the linear polynomial p(x)=3x-4

15.) Graph the linear polynomial $p(x)= -4x + 3$



16.) Rewrite the quadratic polynomial $p(x)=2x^2-3x-4$ in its completed square form using the completing the square formula: $p(x)=a(x+\frac{b}{2a})^2+c-\frac{b^2}{4a}$.

17.) Using your result from problem 16, graph p(x).



18.) How many roots do we expect the quadratic polynomial p(x)= $-\frac{1}{2}x^2+3x-4$

Solve for these roots using the quadratic formula (if there are any).

19.) Completely factor $p(x)=2x^3-3x^2+4x-3$ How many roots does this polynomial have?

20.) Find the roots of $p(x)=-x^3+6x^2+7x$ and then use this information to graph the shape of the function.