Test2 Review, MAT 1375 Professor Chiu

1. Use the 4-step strategy to find the inverse of the function

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

2. Use the 4-step strategy to find the inverse of the function

$$f(x) = \sqrt{2x+7}.$$

3. Work out the following problems about the polynomial function $f(x) = -3(2x-1)^3(x+4)^2$.

(1.)Find the leading term of $f(x)$. Using **the leading coefficient test** to determine the **end behavior** of $f(x)$

(2.) Find the **zeros** of $f(x)$ and their **multiplicities**.

(3.) Find the $\boldsymbol{y}$-intercept of $f(x)$.

4. Work out the following problems for rational function

$$f(x) = \frac{2x+4}{x^2-x-2}.$$

Find its domain, Vertical asymptotes, Horizontal asymptote, x-intercept, and y-intercept.

5. Work out the following problems for rational function

$$f(x) = \frac{2x^2+5x-3}{x^2-x-2}.$$

Find its domain, Vertical asymptotes, Horizontal asymptote, x-intercept, and y-intercept.

6. Use the 3-step strategy to solve for x:

$$x^3 + 8 \leq -2x^2 + 11x$$

7. Use the 3-step strategy to solve for x:

$$\frac{x-2}{x^2-4x-5} > 0.$$

8. The graph of $f(x) = \frac{p(x)}{q(x)}$ is displayed below, where $\deg(p(x)) = \deg(q(x)) = 2$. All intercepts and asymptotes are at integer values. Find all intercepts, asymptotes, and a formula

for $f(x)$.