Read each problem **very carefully** before starting to solve it. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [4 points] Divide $(x^4 - x^3) \div (x^2 + 1)$ and write your answer in the appropriate form.

2. [5 points] Let $f(x) = \dfrac{2x - 4}{3x + 1}$. Find by hand the following:
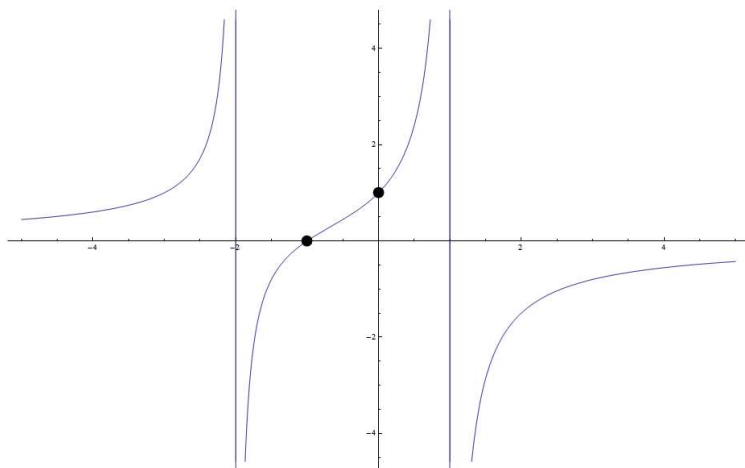
   (a) The domain of f.

   (b) The vertical asymptote(s) (these are line(s)).

   (c) The horizontal asymptote (this is a line).

   (d) The y-intercept (this is a point).

   (e) The x-intercept(s) (these are point(s)).

3. [5 points] The graph of $y = f(x)$ is shown below. Answer the following questions referring to the graph.

(a) Find the vertical asymptote(s).

(b) Find the horizontal asymptote.

(c) Find the x-intercept(s).

(d) Find the y-intercept.

(e) Give a formula for $y = f(x)$.