Practice Exam 2

1. Let $f(x) = x^2 + 6x + 5$
   a) Determine the x & y-intercepts.
   b) Write the quadratic equation in standard form.
   c) Find the vertex of the quadratic function.
   d) Sketch the graph.
2. Let $f(x) = \dfrac{x^2 + 1}{x - 1}$. Find all asymptotes (vertical, horizontal and slant).

3. Let $f(x) = \ln(x + 1) - 1$
   a) Find the domain of $f(x)$.
   b) Find the x & y-intercept of $f(x)$.
   c) Sketch $f(x)$ (label the reference point and any asymptotes).

4. Let $f(x) = -e^{x-2} + 4$
   d) Find the domain of $f(x)$.
   e) Find the x & y-intercept of $f(x)$.
   f) Sketch $f(x)$ (label the reference point and any asymptotes).

5. Let $f(x) = 2x^3 + 3x^2 - 3x - 2$
   a) List the possible rational zeros of $f(x)$.
   b) Show that $x - 1$ is a factor of $f(x)$.
   c) Factor $f(x)$ completely.

6. Let $f(x) = -(x + 1)^2 (x - 1)^2$
   a) Apply the leading coefficient test.
   b) Find the zeros of $f(x)$ and their multiplicity.
   c) Plot sufficient solution points.
   d) Sketch $f(x)$.
7. Let $f(x) = \dfrac{2x + 2}{x - 1}$
   a) Identify the x & y-intercepts.
   b) Find all asymptotes (vertical, horizontal and slant).
   c) Plot sufficient solution points.
   d) Sketch the graph of $f(x)$
8. Solve for x.
   a) $4^{x-3} = 16$
   b) $\ln(3x - 2) = 0$
   c) $e^{2x} - 5e^x + 4 = 0$
   d) $2\log_4 x = \log_4(2x) + \log_4(x - 1)$

9. Solve $x^2 - 3x + 2 \le 0$.