Practice Exam 2 :: Math 115

1. Common Evaluations

Assume $h \neq 0$ and $f(x) = 2x^2 - x$. Evaluate

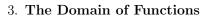
$$\frac{f(a+h)-f(a)}{h}.$$

2. Rate of Change

Compute the average rate of change of the function

$$f(x) = x^3 - \frac{1}{x}$$

on the interval [1, 5].



Find the domain of eac of the functions

$$\frac{\sqrt{(x+3)}}{2x^2+x-1}$$

$$\frac{1}{\sqrt{(x+3)}}$$

4. Graphs of Functions

Graph the each of the following polynomials, showing clearly all x- and y-intercepts.

$$f(x) = -(x-2)^2 + 1$$

$$f(x) = -(x-2)^3 + 1$$

$$f(x) = (x-2)(x+1)(x+6)$$

5. Consider the following rational functions:

$$r(x) = \frac{2x-1}{x^2-x-2}$$
, $s(x) = \frac{x^3+27}{x^2+4}$, $f(x) = \frac{x^3-9x}{x+2}$, $g(x) = \frac{x^2+x-6}{x^2-25}$

(a) Which of these rational functions has a horizontal asymptote?

(b) Which of these rational functions has a slant asymptote?

(c) Which of these rational functions has no vertical asymptote?

(d) Graph y = g(x) showing clearly any asymptotes.