

## Class Assignments – 6

1.

Plot the function  $f(x) = \frac{x^2 - x + 1}{x^2 + x + 1}$  for  $-10 \leq x \leq 10$ .

2.

Make two separate plots of the function  $f(x) = 0.6x^5 - 5x^3 + 9x + 2$ ; one plot for  $-4 \leq x \leq 4$ , and one for  $-2.7 \leq x \leq 2.7$ .

3.

Plot the function  $f(x) = \frac{1.5x}{x-4}$  for  $-10 \leq x \leq 10$ . Notice that the function has a vertical asymptote at  $x = 4$ . Plot the function by creating two vectors for the domain of  $x$ . The first vector (call it  $x1$ ) with elements from  $-10$  to  $3.7$ , and the second vector (call it  $x2$ ) with elements from  $4.3$  to  $10$ . For each of the  $x$  vector create a  $y$  vector (call them  $y1$  and  $y2$ ) with the corresponding values of  $y$  according to the function. To plot the function make two curves in the same plot ( $y1$  vs.  $x1$ , and  $y2$  vs.  $x2$ ).

4.

Plot the function  $f(x) = \frac{x^4 - 5x + 10}{x^2 - 2x - 3}$  for  $-10 \leq x \leq 10$ . Notice that the function has two vertical asymptotes. Plot the function by dividing the domain of  $x$  into three parts; one from  $-10$  to near the left asymptote, one between the two asymptotes, and one from near the right asymptote to  $10$ . Set the range of the  $y$ -axis from  $-20$  to  $20$ .

5.

Plot the function  $f(x) = 3x\sin(x) - 2x$  and its derivative, both on the same plot, for  $-2\pi \leq x \leq 2\pi$ . Plot the function with a solid line, and the derivative with a dashed line. Add a legend and label the axes.

6.

Plot the function  $f(t)$  with red curve in the range of  $0 < t < n$ , where  $n$  is your computer number:

$$f(t) = \sqrt{n \cdot t} \sin^n(t)$$

Add a title (include  $n$  in the title) and label the axes.

7.

Plot the function  $g(q)$  with green curve in the range of  $0 < q < k$ , where  $k$  is

your computer number:  $g(q) = (q - k) \cos\left(\frac{2q^2}{k}\right)$

Add a title (include  $k$  in the title) and label the axes.