

Math 1010 March 1, 2017 Homework 18
Text problems: 5.1 # 13, 17

1) Consider the rational function $f(x) = \frac{x^2 - 25}{x^2 - x - 2}$.

a) Find the domain (where denominator is not equal to zero.)

b) Find the x-axis intercepts (where numerator equals zero.)

c) Find the y-axis intercept (set $x = 0$ if 0 is in the domain.)

d) Find the vertical asymptotes (where den = 0 and numerator is not equal to zero.)

e) Find the horizontal asymptote:

- if degree(num) = degree(den), $y = \frac{\text{leading coefficient of numerator}}{\text{leading coefficient of denominator}}$.
- if degree(num) < degree(den), $y = 0$
- if degree(num) > degree(den), none

f) Plot and label the intercepts and asymptotes (dotted lines), then use your graphing calculator to complete the sketch of the graph. You may plot one point between each x-axis intercept and vertical asymptote to help complete the sketch of the graph.