

Be able to do this without a calculator. Show your work.**Due Thurs, Feb. 28**

1. (35 pts) Let $f(x) = \frac{2x^2 - 9x - 5}{x^2 - 2x - 15}$.

- a. Find the domain.
- b. Determine if the function is symmetric to the y-axis, the origin, or neither.
- c. Find any vertical asymptotes.
Give their equation: $x =$
- d. Find any holes in the graph: (x,y)
- e. Find the y-intercept, if it exists.
- f. Find any x-intercepts.
- g. Find the equation of the horizontal asymptote or slant (oblique) asymptote.
- h. Sketch the graph.

2. (35 pts) Let $y = \frac{x^2-9}{4x^2-9}$.

- a. Find the domain.
- b. Determine if the function is symmetric to the y-axis, the origin, or neither.
- c. Find any vertical asymptotes.
Give their equation: $x =$
- d. Find any holes in the graph: (x,y)
- e. Find the y-intercept, if it exists.
- f. Find any x-intercepts.
- g. Find the equation of the horizontal asymptote or slant (oblique) asymptote.
- h. Sketch the graph.

3. (10 pts) Find the equation of the horizontal or slant asymptote of the function

$$y = \frac{4x+3}{x^2-x-5}$$

4. (10 pts) Find the equation of the horizontal or slant asymptote of the function

$$y = \frac{2x^2-6x+3}{x-5}$$

5. (10 pts.) Solve the inequality. Give the solution in interval notation.

$$\frac{2x-7}{4x+1} \geq 0$$