

NAME: _____ Score _____/10

Please **print** your name**No Decimals No mixed numbers No complex fractions No boxed or circled answers****Do all sketching on the coordinate system provided.**

1. Consider the function f whose rule is $f(x) = \frac{4x^2 + 5x - 6}{2x^2 - 9x - 5} = \frac{(4x - 3)(x + 2)}{(2x + 1)(x - 5)}$

- a. What is the domain of f ? $\left(-\infty, -\frac{1}{2}\right) \cup \left(-\frac{1}{2}, 5\right) \cup (5, +\infty)$ sketch it.
- b. What are the zeros of f ? $\frac{3}{4}$ and -2 sketch it.
- c. What are the vertical asymptotes of f ? The lines $x = -\frac{1}{2}$ and $x = 5$ sketch it.
- d. What is the horizontal asymptote of f ? **The line $y = 2$** sketch it.
- e. Sketch the graph of f . The following calculations will help. I did some for you.
- $f(-3) = \frac{(4[-3] - 3)(-3 + 2)}{(2[-3] + 1)(-3 - 5)} = \frac{(-15)(-1)}{(-5)(-8)} = \frac{15}{40} = \frac{3}{8}$. Plot the corresponding point.
 - Calculate $f(-1)$. Plot the corresponding point.

$$f(-1) = \frac{4 - 5 - 6}{2 + 9 - 5} = \frac{-7}{6}$$
 - Calculate $f(0)$. Plot the corresponding point.

$$f(0) = \frac{-6}{-5} = \frac{6}{5}$$
 - $f(1) = -\frac{1}{4}$. Plot the corresponding point.
 - $f(7) = \frac{45}{6}$. Plot the corresponding point.
- vi. The graph of f crosses its horizontal asymptote at $\left(-\frac{1}{5}, 2\right)$.

