

Points possible: 100

Math 1050-90, Fall 2021, Due 9/28 at 11:59 p.m.

**Rules/Suggestions:** Write with a dark pencil, so that your work is visible. **You are graded on your work, not just answers. Even if you do calculations in your head or on scratch, show work if space is provided.** Write the final answer in the box.

Notes: You are on your honor for this to be your own work. (You can ask for help on quiz material, but you should not ask for help on specific problems.)

1. Find the requested information for the function  $f$ . Write asymptotes as equations and intercepts as ordered pairs.

$$f(x) = \frac{12(x-1)}{(x-5)(x+8)}$$

- (1.1) (15 points) Write intercepts as ordered pairs (1.3) (10 points)  
and asymptote(s) as equations.

$x$ -intercept(s):
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$y$ -intercept:
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Vertical Asymptote(s):
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Other Asymptote:
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End Behavior:
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As $x \rightarrow -\infty$ , $f(x) \rightarrow$ _____
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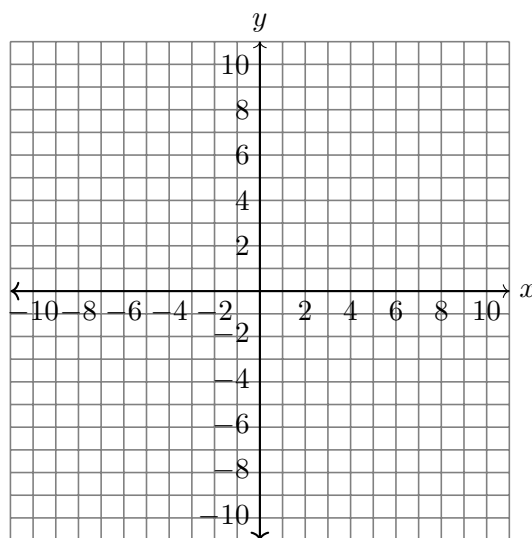
As $x \rightarrow \infty$ , $f(x) \rightarrow$ _____
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- (1.4) (15 points) Sketch the graph, carefully marking intercepts, asymptotes and holes.

- (1.2) (10 points) Use interval notation.

Domain:
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Range:
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2. (15 points) A rational function  $f$  has the following properties. Write a rule for the function.

- Vertical asymptotes at  $x = 1$  and  $x = -6$
- $x$ -intercepts at  $(-3, 0)$  and  $(6, 0)$
- $y$ -intercept at  $(0, 9)$

$f(x) =$

3. (15 points) Find the equation of slant/oblique asymptote of  $g(x) = \frac{24x^3 + 7x}{4x^2 + 15}$ .

Asymptote:

4. (20 points) State the hole in the graph of the following function, and write it in its reduced form with the domain restriction. Enter answers with integers or fractions, not decimals.

$$h(x) = \frac{3x + 9}{3x^2 - 6x - 45}$$

Hole (as an ordered pair):

Reduced form of the rational function:

Restricted domain (in interval notation):