Example Sketch the graph and provide information about intercepts and asymptotes.

$$f(x) = \frac{x^2 - x - 2}{x - 1}$$

1. Find and plot the x-intercepts. (Set numerator = 0 and solve for x)

$x^2 - x - 2 = 0$
$(x + 1)(x - 2) = 0$
$x = -1$ and $x = 2$

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2. Find and plot the y-intercepts. (Let x = 0 and solve for y)

$$f(0) = \frac{0^2 - 0 - 2}{0 - 1} = \frac{-2}{-1} = 2$$

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3. Find and plot the Vertical Asymptotes. (Set denominator = 0 and solve for x)

$(x - 1) = 0$ $x = 1$

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4. Find and plot the Horizontal Asymptotes. (Top heavy, Bottom heavy or Same)

(Rule 3) Top Heavy none !

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5. Find and plot the Slant Asymptotes. (Divide numerator by denominator.)

$x - 1 \overline{)\, x^2 - x - 2}$ $y = x$

$-x^2 + x$

0

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6. Plot at least one point between and beyond each x-intercept and vertical asymptotes.

choose:

x = -2 y = -1.3	x = 0 y = 2	x = 1.5 y = -2.5	x = 3 y = 2

Note: YOU MAY WANT TO PICK MORE POINTS TO GET A BETTER GRAPH !

ANSWER: