

Factoring Quiz

Consider the graph of this rational function:

$$f(x) = \frac{3x^2 + 2}{x^2 + 4x - 5}$$

$$(x+5)(x-1) = 0$$

Find

The x-intercepts, if they exist. Write them as ordered pairs (x, y)

no x-intercepts $3x^2 + 2 = 0 \quad x = \pm \sqrt{-\frac{2}{3}}$

Consider the vertical asymptotes. Write them as equations of vertical lines

$$x = -5 \quad x = 1$$

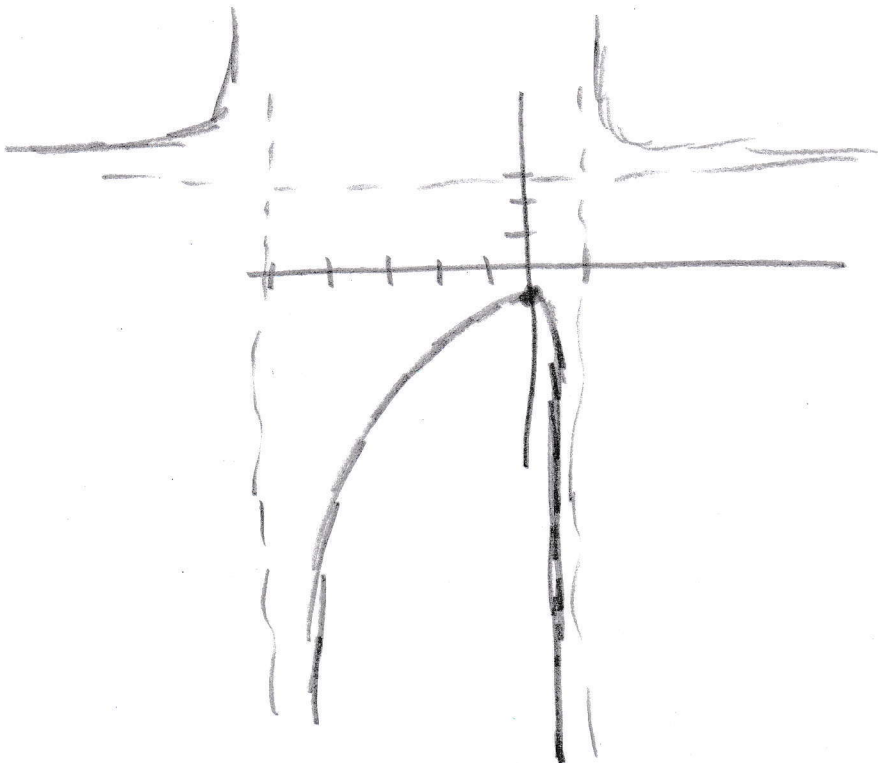
Does this function have a horizontal asymptote? What is it? Write as the equation of a horizontal line.

same power so $y = 3$

Find the y-intercept. Write as an ordered pair (x, y)

$$f(0) = \frac{2}{-5} \quad (0, -\frac{2}{5})$$

Make a sketch of this rational function

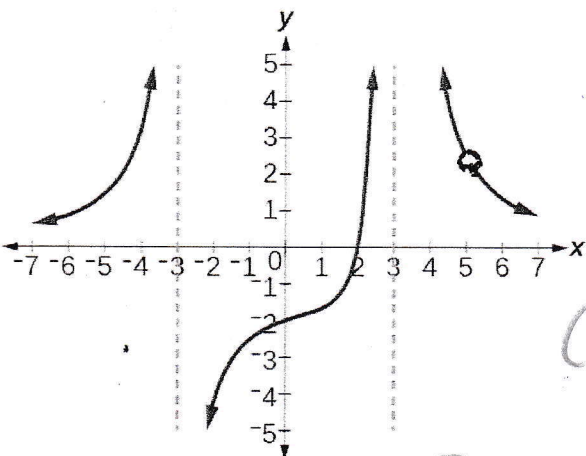


Write a rational function that has these characteristics:

Vertical asymptotes at $x = -4$ and $x = -5$, x-intercepts at $(4, 0)$ and $(-6, 0)$, Horizontal asymptote at $y = 7$

$$y = \frac{7(x-4)(x+6)}{(x+4)(x+5)}$$

Write a rational function that has this graph



zero Hole

$$\frac{a(x-2)(x-5)}{(x+3)(x-3)^2(x-5)}$$

ACB
like
|
~~x-2~~

$$-2 = \frac{a(-2)}{27}$$

$$\frac{27}{-2} \cdot -2 = a$$

$$27 = a$$

$$y = \frac{27(x-2)(x-5)}{(x+3)(x-3)^2(x-5)}$$

Consider the graph of this rational function:

$$f(x) = \frac{-3(x+2)^2(x-1)}{(x-1)(x-2)^2}$$

Hole @
 $x=1$

Find

The x-intercepts. Write them as ordered pairs (x, y)

$x = -2$ Dbl Root

Consider the vertical asymptotes. Write them as equations of vertical lines

$x = 2$

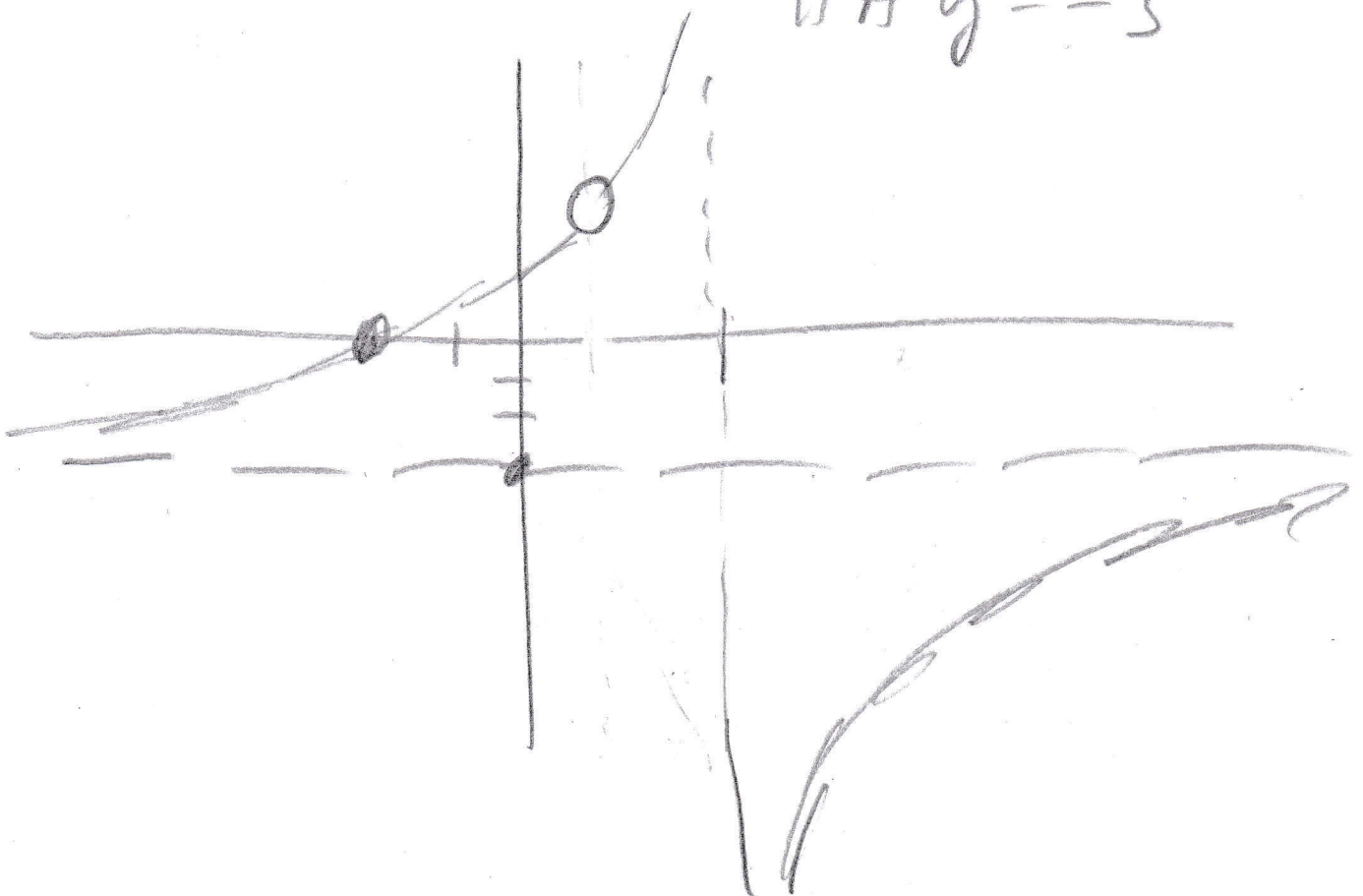
Find the y-intercept. Write them as ordered pairs (x, y)

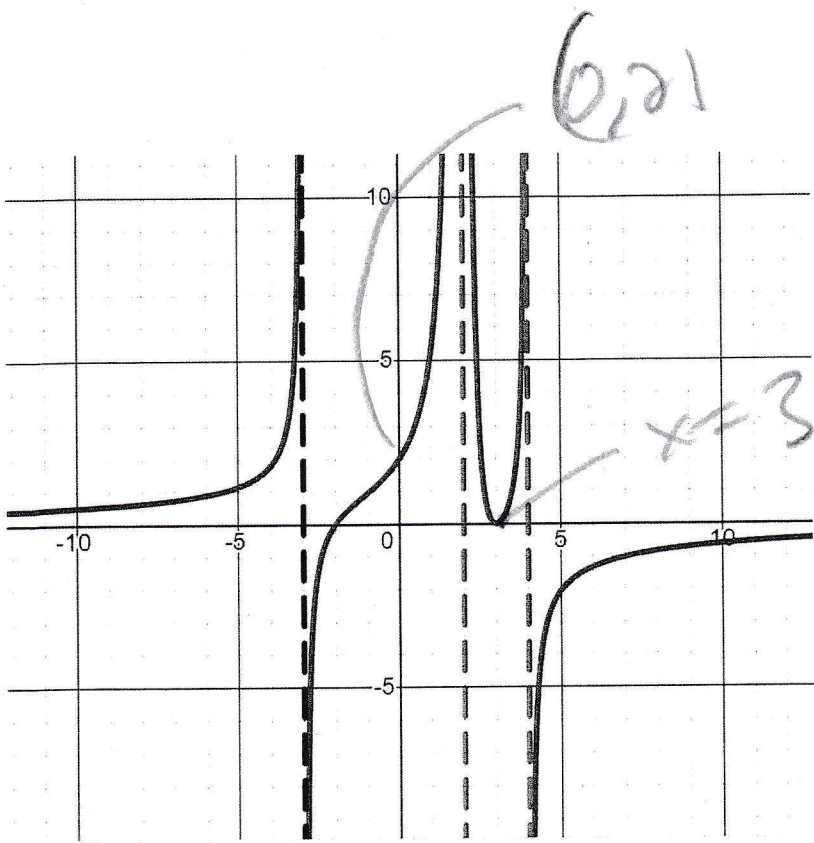
$$\frac{-3(2)^2(-1)}{(-1)(-2)^2}$$

$$\frac{-12}{4} = -3 \quad (0, -3)$$

Make a sketch of this rational function

HA $y = -3$





$$x = -3 \quad | \quad x = 4$$

$$x = 2$$

$$\frac{-32(x-3)^2}{3(x+3)(x-2)^2(x-4)}$$

$$2 = \frac{a(9)}{-48} \rightarrow 2 = \frac{a(3)}{-16}$$

$$\frac{-32}{3}$$