Analyzing Rational I

4. Graph each function using technolc identify any asymptotes and interce

a) $y =$ b)

b) $y =$

d)

hw?

8. The rational function $y = \frac{a}{x-7} + k$ passes through the points (10, 1) and (2, 9).

a) Determine the values of a and k.

b) Graph the function.

$1 = \frac{a}{3} + k$ ① $\quad 9 = \frac{a}{-5} + k$ ②

$k = 1 - \frac{a}{3}$ $\quad k = 9 + \frac{a}{5}$

12. Determine the locat of the function $y =$ of the function to h the asymptotes.

Christmas quiz

Analyzing Rational Functions (9.2) p452 day 2

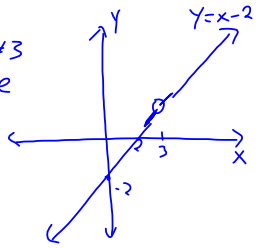
ex1: Sketch $y = \frac{x^2 - 5x + 6}{x - 3}$ ← factor + cancel

$y = \frac{(x-2)(x-3)}{x-3}$ $\quad x \neq 3$ hole

$y = x - 2$

$m = 1$

$b = -2$



Analyzing Rational Functions (9.2) p452 day 2

ex2: Sketch $y = \frac{x^2 + 2x}{x^2 - 4}$ f + c

$y = \frac{x(x+2)}{(x-2)(x+2)}$ hole $x = -2$

$y = \frac{x}{x-2}$

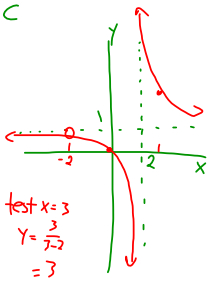
V.a. $x = 2$

h.a. $y = \frac{x}{x} = 1$

y-int $y = \frac{0}{-2}$ $\quad y = 0$

x-int $y = 0$

test $x = 3$ $\quad y = \frac{3}{3-2} = 3$



factor in denominator = vertical asymptote

factor that canceled = hole

Analyzing Rational Functions (9.2) p452 day 2

ex3: Sketch $y = \frac{x^2 + 2}{x^2 - 2x - 3}$ f + c

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

V.a. $x = 3, \; x = -1$

h.a. $y = \frac{x^2}{x^2} = 1$

y-int $x = 0$ $\quad y = \frac{2}{-3}$

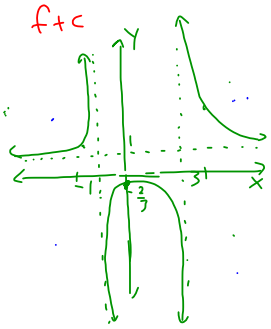
x-int $x^2 + 2 = 0$

$x^2 = -2$

no x-int

test $x = 4$ $\quad y = \frac{16+2}{(4-3)(4+1)} = \frac{18}{5}$

test $x = -2$ $\quad y = \frac{(-2)^2 + 2}{(-2-3)(-2+1)} = \frac{6}{5}$



4a

Analyzing Rational Functions (9.2) p452 day 2

ex4: Sketch $y = \frac{x - 1}{x^2 - 1}$ f + c

$y = \frac{x-1}{(x-1)(x+1)}$ hole $x = 1$

$y = \frac{1}{x+1}$

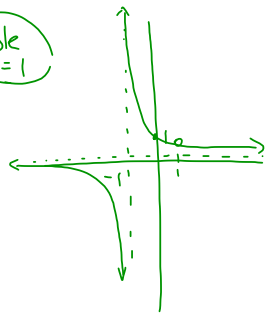
V.a. $x = -1$

h.a. $y = \frac{1}{x} = 0$

y-int $y = \frac{1}{1}$

$y = 1$

x-int $1 = 0$ no x-int



Analyzing Rational Functions (9.2) p452 day 2

4a

hw: p452# 5, 8a, 9

4a) $Y = \frac{x^2+4x}{x^2+9x+20}$

$= \frac{x(x+4)}{(x+5)(x+4)}$

hole $x=-4$

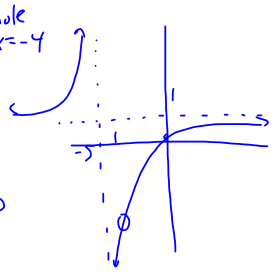
$Y = \frac{x}{x+5}$

V.as $x=-5$

has $Y=1$

Y int $Y=0$

X int $X=0$



5. Which graph matches each rational function? Explain your choices.

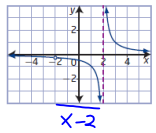
a) $A(x) = \frac{x^2+2x}{x^2+4}$ b) $B(x) = \frac{x-2}{x^2-2x} = \frac{x-2}{x(x-2)} = \frac{1}{x}$

c) $C(x) = \frac{x+2}{x^2-4}$ d) $D(x) = \frac{2x}{x^2+2x}$ $x=2$ hole

$x=-2$ hole $= \frac{x+2}{(x+2)(x-2)} = \frac{1}{x-2}$

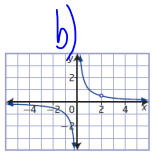
$= \frac{2x}{x(x+2)} = \frac{2}{x+2}$ $x=0$ hole

c)

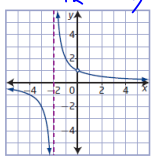


$x-2$

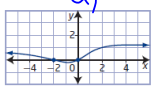
b)



$x+2$ d)



a)



8a) V.a. $x=5$ $x=-5$

x-int $-10, 4$

$Y = \frac{(x-4)(x+10)}{(x+5)(x-5)}$

$Y = \frac{x^2+6x-40}{x^2-25}$

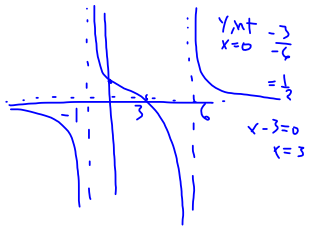
9.

$f(x) = \frac{x-3}{x^2-5x-6}$

$= \frac{x-3}{(x-6)(x+1)}$

Y int $x=0$ $\frac{-3}{-6} = \frac{1}{2}$

$x-3=0$ $x=3$



$g(x) = \frac{x-3}{x^2-5x+6}$

$= \frac{x-3}{(x-3)(x-2)}$ hole $x=3$

$= \frac{1}{x-2}$