Bell Work

Factor

$$\frac{x^2-x-2}{3x^2-7x+2} = \frac{(x+1)(x-2)}{(3x-1)(x-3)} = \frac{x+1}{3x-1}$$

$a(c)$: $6 \mid -7$

$-2 \mid 1$

$-1 - 6$

$\frac{-1}{3} \quad \frac{6}{3}$

Rational Functions and Their Graphs

Find the domain, points of discontinuity, and x- and y-intercepts of each rational function. Determine whether the discontinuities are removable or nonremovable.

1) $y = \dfrac{(x-4)(x+3)}{x+3}$

D: $x+3=0$

$x=-3$ $x\neq -3$

P.O.D: $x=-3$

removable (hole)

y-int: $y=-4$ $y=0-4$

x-int: $0=x-4$

$x=4$

2) $y = \dfrac{4x}{x^4+16}$

D: $x^4+16=0$ $(-\infty,\infty)$

$x^4=-16$

P.O.D = none

y-int: $y=0$

x-int: $0=\dfrac{4x}{x^4+16}$

$0=4x$

$x=0$

Find the vertical asymptotes and holes for the graph of each rational function.

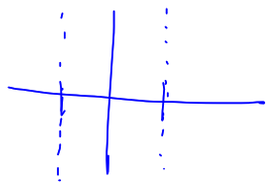
3) $y = \frac{5-x}{x^2-1} = -\frac{x-5}{(x+1)(x-1)}$

P.O.D = -1, 1

$x = -1, 1$

nonremovable

V.A: $x = -1, 1$

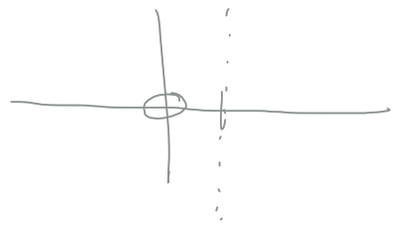


4) $y = \frac{x}{x(x-1)}$

$x = 0, 1$

P.O.D. $x = 0$ = hole

$x = 1$ = V.A

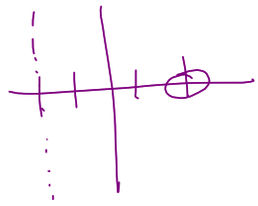


5) $y = \frac{x-2}{(x+2)(x-2)}$

$x = -2, 2$

$x = -2$ = V.A.

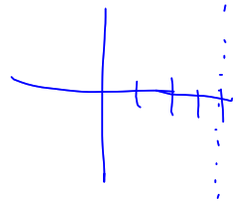
$x = 2$, = hole



6) $y = \frac{x^2-25}{x-4} = \frac{(x+5)(x-5)}{x-4}$

$x = 4$ = V.A

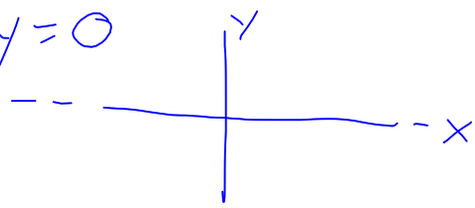
no holes



Find the horizontal asymptote of the graph of each rational function.

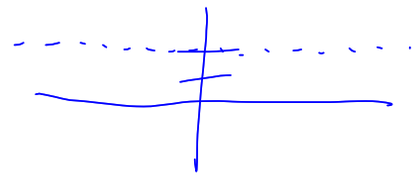
7) $y = \frac{2}{x-6}$ degree = 0, degree = 1

H.A = $y = 0$



8) $y = \frac{2x^2+3}{x^2-6}$ degree = 2, degree = 2

H.A = $\frac{2}{1} = 2 = y$



$\frac{a^n}{b^m}$ = leading term of both numerator and denominator

If $m > n$, H.A is $y = 0$

If $m = n$, H.A is $\frac{a}{b}$

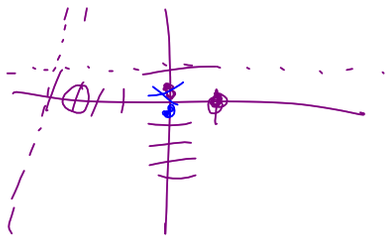
If $m < n$, no H.A

Bellwork

$y = \frac{x^2+2x-3}{x^2+7x+12}$

$\frac{(x+3)(x-1)}{(x+4)(x+3)}$

$x = -4, x = -3$



Find the V.A, H.A, hole

H.A $y = 1$

hole $= -3 = x$

V.A $= x = -4$

x-int; $x = -3, 1$

y-int $= \frac{-1}{4}$

Identify the horizontal and vertical asymptotes along with the x and y intercepts. Graph each function

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

H.A = y = 0

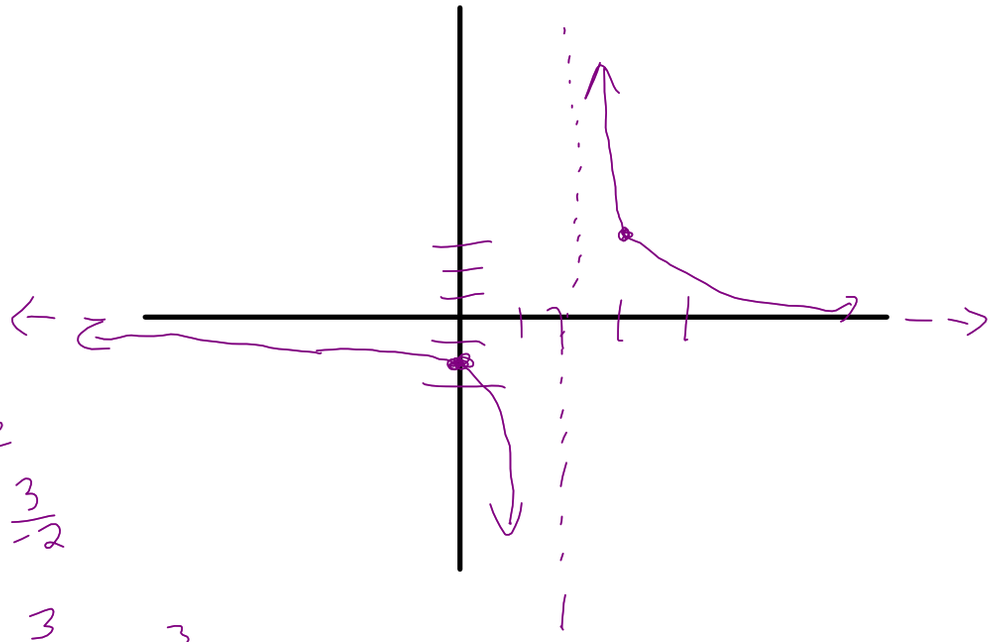
hole = none

V.A = x = 2

x-int = none

y-int = y = $\frac{3}{-2}$

x = 3, $\frac{3}{3-2} = \frac{3}{1} = 3$



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

H.A = $y = 1$

hole = none

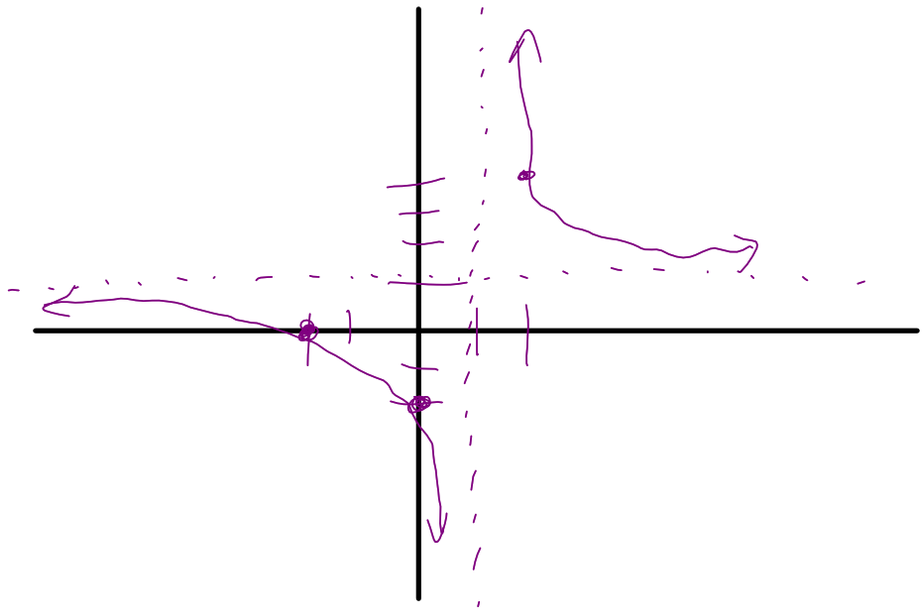
V.A = $x = 1$

x-int

$x + 2 = 0$

$x = -2$

y-int = $\frac{2}{-1} = -2$



$x = 2$ $\frac{2+2}{2-1} = 4$

$y = \frac{x^2 - 1}{x^2 - 4} = \frac{(x+1)(x-1)}{(x+2)(x-2)}$

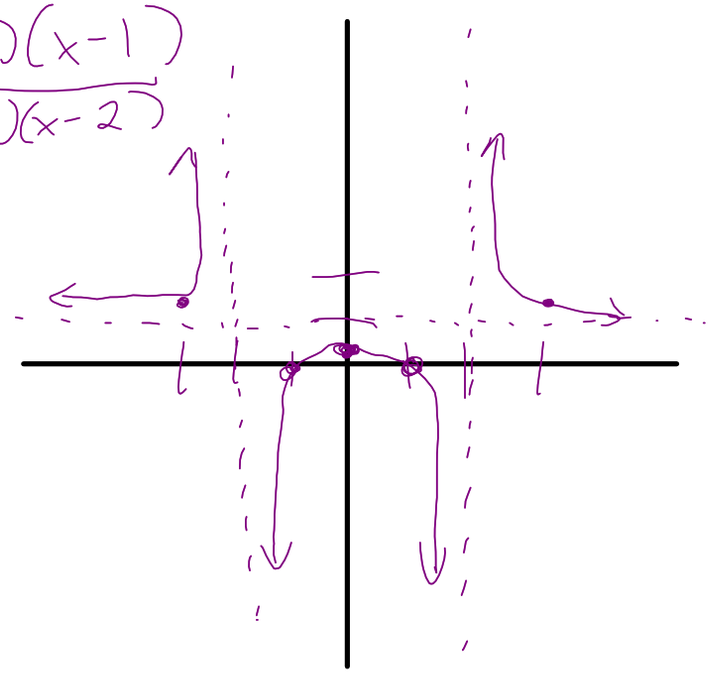
H.A = $y = 1$

hole: none

V.A: $x = -2, 2$

X-int: $x = 1, -1$

y-int: $-\frac{1}{4} = \frac{1}{4}$



$\frac{3x^2 - 5}{2x^2 + 4}$ = H.A = $\frac{3}{2} = y$

$x = -3$ $\frac{(-3)^2 - 1}{(-3)^2 - 4} = \frac{8}{5}$

How many milliters of a 0.5% saline solution must be added to a 75 mL of 2% saline solution to get a 0.65% salin solution

$.005x + 75(.02) = .0065(x+75)$

$.005x + 1.5 = .0065x + .4875$

$-.4875 \quad -.005x$

$1.0125 = .0015x$

$x = 675 mL$

of 0.5% saline solution