

15 mins = .25 hrs

let b = speed 3 bird	r	t	= d
faster with wind w = speed wind	$(b + w)$.25	1800
slower agst wind	$(b - w)$.25	$\frac{1}{3}$ of 1800 600

$.25b + .25w = 1800$
 $.25(4800) + .25w = 1800$
 $1200 + .25w = 1800$
 $.25w = 600$
 $w = 2400$ meters per sec.

$.25b - .25w = 600$
 $.5b = 2400$
 $b = 4800$ meters per hour

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Dec 1-7:44 AM

			Total
Chamomille let c = lbs cham. Chamomille	$\$8$ / pound	c	$+ L = 10$
lavendar let L = lbs lav. lavendar	$\$12$ / pound	$8c$	$+ 12L = 9.25$ (10)
Mixture	10 lbs.		$\$9.25$ / pound

Dec 1-7:58 AM

③

faster with wind	$(b + w) \cdot 15$	$= 1800$
slower agst wind	$(b - w) \cdot 15$	$= \frac{1}{3}(1800)$ 600

$$15b + 15w = 1800$$

$$15b - 15w = 600$$

$$\begin{array}{r} 30b \\ \hline = 2400 \\ \hline 80 \end{array}$$

$15(80) + 15w = 1800$

$1200 + 15w = 1800$

$15w = 600$

$w = 40$

$b = 80$ meters per minute

Dec 1-9:13 AM

Make sachets from chamomile & lavender

let L = lbs. lavender
lavender cost \$12/lb

Cham costs \$8/lb
let C = lbs. cham

Make 10 pounds of mix
sell for \$9.25/lb

How much of each should we mix?

#	Q	C	+ L	=	TOTAL
					10
\$	V	8C	+ 12L	=	9.25(10)

$$-8(C + L) = (10) - 8$$

$$8C + 12L = 92.5$$

$$\rightarrow -8C - 8L = -80$$

$$4L = 12.5$$

$$L = 3.125 \text{ pounds lavender}$$

$$6.875 \text{ pounds cham.}$$

Dec 1-9:36 AM

$f(x) = \frac{P(x)}{Q(x)}$

$0 = \frac{4}{x-2}$
 no solution
 "none"

$P \text{ \& } Q \text{ are polys.}$
 $P(x) \neq 0$
 $Q(x) \neq 0$

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

Working eq = eq that remains after
 dividing out common factors

zero of den \rightarrow
 den = 0
 zero of num
 num = 0

Dec 1-10:42 AM

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

hole at $x=3$
 $y=5$
 hole $(3, 5)$

Hole: $y = \frac{(x-1)}{(x-1)(x+3)}$

$y = \frac{1}{x+3}$

hole $(1, \frac{1}{4})$

Dec 1-11:06 AM

$den = 0 \rightarrow \text{vertical asympt} \rightarrow \text{set } den = 0$
 $num = 0 \rightarrow x \text{ int} \rightarrow \text{set } num = 0$
 $0 = \frac{1}{(x+3)(x-2)}$
 $0 = 1$

none
 $y \text{ int}$
 $(0,)$

Dec 1-11:23 AM

$f(x) = \frac{p(x)}{q(x)} = \frac{ax^m + \dots}{bx^n + \dots}$

$\frac{3}{0}$ $\frac{n}{1}$

$m < n$ H.A.
 $y=0$
 $y=0$
 $y=0$
 $y=0$

Dec 1-12:03 PM

Set 2	m	n	A	B	H.A
	1	1	2	1	$y = 2$
	2	2	1	1	$y = 1$
	3	3	6	2	$y = 3$
	2	2	5	1	$y = 5$

If $m=n$ then $HA \Rightarrow y = \frac{A}{B}$

Both the same, compare coefficient B

$$y = \frac{8x^3 - 4x + 3}{4x^3 - 1}$$

$HA \Rightarrow y = \frac{8}{4} = 2$

Dec 1-12:08 PM

$$y = 4$$

$$y = \frac{8x}{2x+3}$$

Dec 1-12:12 PM

NO H.A.

m	n
2	1
2	1
2	1
3	2

$$\underline{m > n} \rightarrow$$

NO H.A.
Slant asymptote
 instead

Dec 1-12:13 PM

• Hole factor num ; den. Hole exists if a factor divides out.

• VA $x \text{ int}$ $den = 0$ in working eq
 $y \text{ int}$ set $y = 0 \leftrightarrow num = 0$
 set $x = 0$ in W.EQ

H.A. Complete exp of leading terms.

m, n
 • $m > n$ Bigger on Top \rightarrow BOT NO
 NO H.A

• $m < n$ Bigger on bottom \rightarrow BOB \neq $y = 0$

• $m = n$ BOTH SAME
 compare coefficients
 BOB CO $y = \frac{A}{B}$

$x = c$
 find
 y coord
 by subbing
 into W.Eq.

Dec 1-12:16 PM