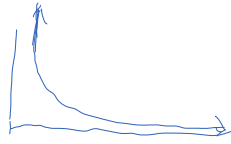


- 3 i) A
- ii) C
- iii) C
- iv) B

4. a.



b.  $\frac{2500}{n} + 1.25 \quad n = 500$

$\frac{2500}{500} + 1.25 = 5 + 1.25 = \boxed{\$6.25}$

c.  $\frac{2500}{x} + 1.25 = 8$

$x \approx \boxed{370}$

5. a.  $\frac{6050}{(6.5)^2} \approx \boxed{3.86 \text{ cm}}$

b. a.  $t = \frac{230}{160} - \frac{230}{160+5}$

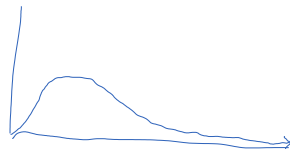
b.  $\frac{69}{275} \text{ hr.}$  c.  $\frac{18180}{127} \text{ km/h}$

b.  $h = \frac{6050}{(6.5+x)^2} - \frac{6050}{6.5^2}$

7. a)  $x = -3, y = 0$     b)  $x = -4, y = 3$     c)  $x = -7, y = 6$     d)  $x = \pm 4, y = 1$

- e)  $y > 0$     f)  $x = \frac{2}{3}, -\frac{1}{2}, y = \frac{x}{6} + \frac{1}{36} ?$     g)  $x = \pm 3, y = -2$     h)  $x = 0, 4, -1, y = 3x + 9$

8. No vertical asymptote  
 $y = 0$



9.  $x^2 + 6x + 8 = 0$   
 $(x+2)(x+4) = 0$   
 $\boxed{x = -2, -4}$

10.  $\frac{x^2+x-6}{2x^2+7x+3} = \frac{(x+3)(x-2)}{(2x+1)(x+3)} = \frac{x-2}{2x+1}$  if  $x \neq -3$   
 $x \neq -\frac{1}{2}$   
 $y \neq \frac{1}{2}$   $\boxed{(1, 1; 0)}$

11.  $x^2 + 1 = 0$   
 $\boxed{0}$

13.  $\frac{4x^2+75}{2x^2+3} = k$      $4x^2+75 = 2x^2k+3k$   
 $\underline{2x^2 = k}$

0

12.  $x^2 - 48 \leq 0$

$x = \pm \sqrt{48}$

$$x^2 - 48 \left| \begin{array}{r} 3x + 1 \text{ r. } 144x + 52 \\ 3x^2 + x^2 + 4 \\ -144x \\ \hline x^2 + 144x + 4 \\ -144x \\ \hline -48 \\ \hline 144x + 52 \end{array} \right.$$

$(-\sqrt{48})(\sqrt{48})(3)(1) = \boxed{-144}$

13.  $\frac{4x^2 + 75}{2x^2 + 3} = k$

$4x^2 + 75 = 2x^2k + 3k$

$x = \sqrt{\frac{3k - 75}{4 - 2k}}$

$\frac{3k - 75}{4 - 2k} \geq 0$

$(3k - 75 \geq 0 \text{ if } 4 - 2k \geq 0) \text{ or } (3k - 75 \leq 0 \text{ if } 4 - 2k \leq 0)$

~~$(k \geq 25 \text{ if } k \leq 2)$~~  or  $\boxed{(k \leq 25 \text{ if } k \geq 2)}$

$2 < k \leq 25$   
h. asymptote

$k \in \{3, \dots, 25\}$

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14.  $f(x) = \frac{ax+b}{cx+d}$  Number not in range  $= \frac{a}{c}$

$f(f(x)) = \frac{(a^2+bc)x + ab+bd}{(act+cd)x + bc+d^2} = x$

$f(1a) = 1a$

$\frac{19a+b}{19c+d} = 1a$

$\boxed{19a+b = 19^2c + 19d}$

$f(97) = 97$

$\boxed{97a+b = 97^2c + 97d}$

$ac + cd = 0 \rightarrow \boxed{a = -d}$   
 $ab + bd = 0 \rightarrow a = -d$   
 $\frac{a^2 + bc}{bc + d^2} = 1 \rightarrow a = -d$

$\rightarrow 38a + b = 19^2c$

$194a + b = 97^2c$

$156a = (97^2 - 19^2)c$

$\frac{a}{c} = \frac{97^2 - 19^2}{156} = \boxed{58}$