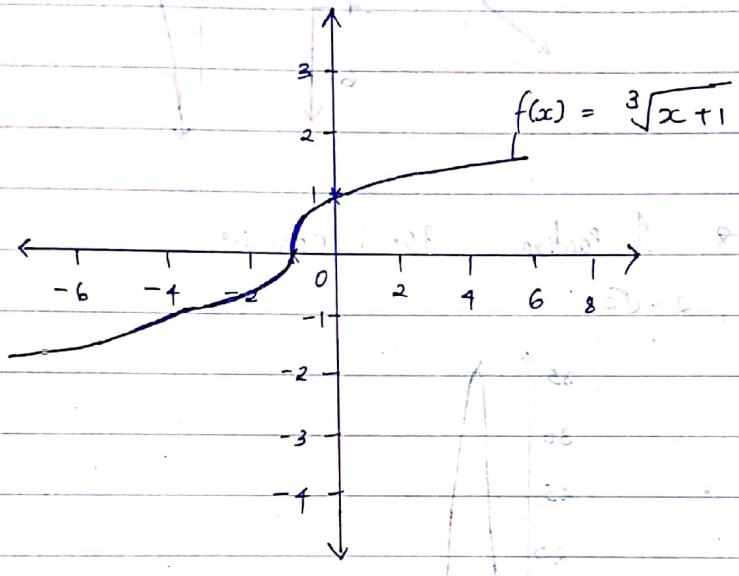
1. $-1 < x < \frac{7}{3}$

2. $x < -1$ or $x \geq 2$

3. $f^{-1}(x) = \sqrt[3]{x+1}$



4.

$$A^{-1} = \begin{bmatrix} -4 & -4 & 5 \\ 1 & 1 & -1 \\ 5 & 4 & -6 \end{bmatrix}$$

$(x, y, z) = (-38, 9, 47)$

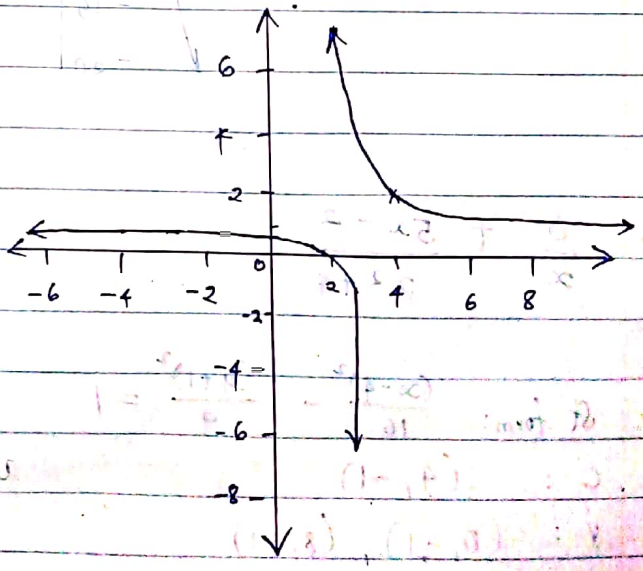
5. Asymptotes: VA : $x = 3$

HA : $y = 1$

hole: $(-3, 5/6)$

X-int : $(2, 0)$

y-int : $(0, 2/3)$



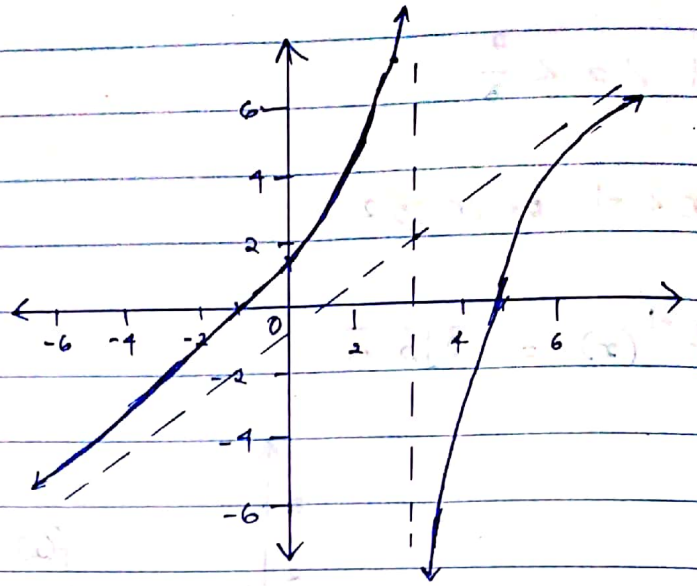
6. VA: $x = 3$

HA: $y = x - 1$

Holes: None

X-int: $(5, 0)$, $(-1, 0)$

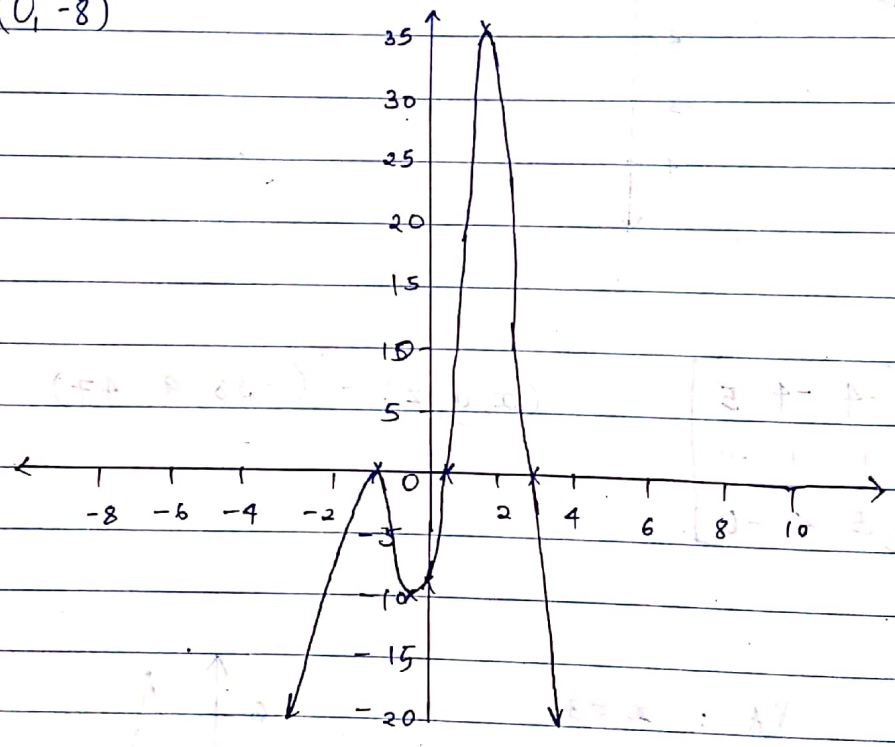
Y-int: $(0, 5/3)$



7. (a) ~~$-1, 10, 8, 8$~~ 1 positive, 3 or 1 negative

(b) $-2, 2+\sqrt{2}, 2-\sqrt{2}$

(c) $(0, -8)$



8. $\frac{6}{x} + \frac{5x - 2}{x^2 + 4}$

9. St form: $\frac{(x-4)^2}{16} - \frac{(y+1)^2}{9} = 1$

c: $(4, -1)$

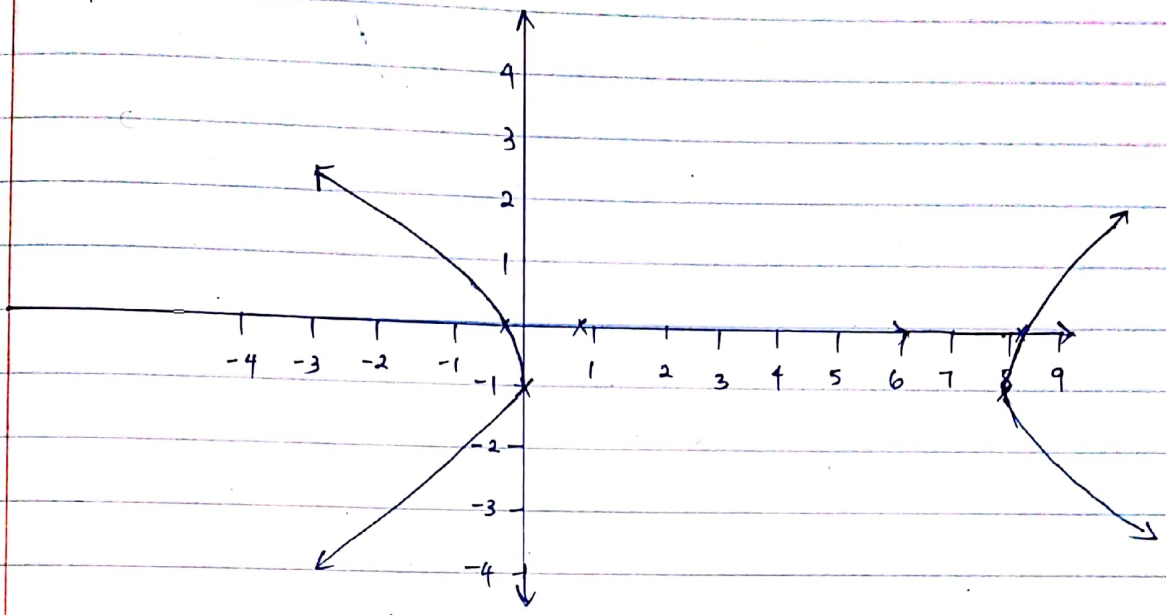
v: $(0, -1)$, $(8, -1)$

f: $(-1, -1)$, $(9, -1)$

a: $y = \frac{3x}{4} - 4$

$y = -\frac{3x}{4} + 2$

Graph



10. a_n : $12 \cdot 2^{(n-1)}$

a_5 : 192

S_5 : 372

11 $(x^2 - 2x - 3) + (1 + x)i$

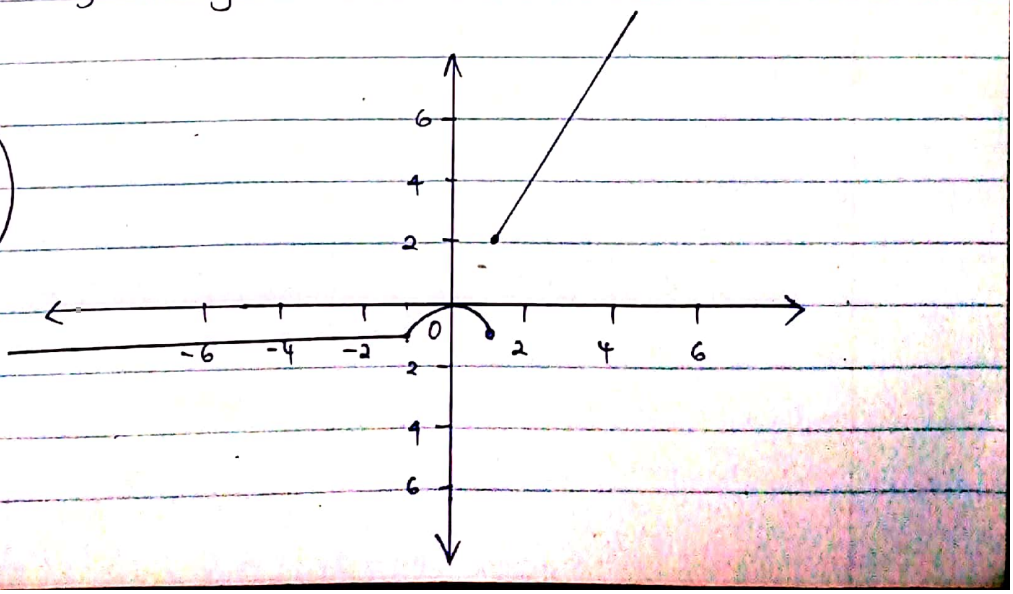
12. $f - g = \frac{x^3 - x - 1}{x}$ $D = (-\infty, 0) \cup (0, \infty)$

$fog = \frac{1}{x^2 - 1}$ $D = (-\infty, 0) \cup (0, \infty)$

$gof = \frac{1}{x^2 - 1}$ $D = (-\infty, -1) \cup (-1, 1) \cup (1, \infty)$

13 $\frac{x^3}{27} - \frac{4x^2y}{3} + 16xy^2 - 64y^3$

14. $\begin{pmatrix} x = 0, & y = 1 \\ x = 1, & y = 2 \end{pmatrix}$



15. $f(0) = 0$

$f(2) = 4$

$f(-4) = -1$