

$$y < -2\sqrt[3]{4-x} + 2$$

$$y < -2\sqrt[3]{-(x-4)}$$

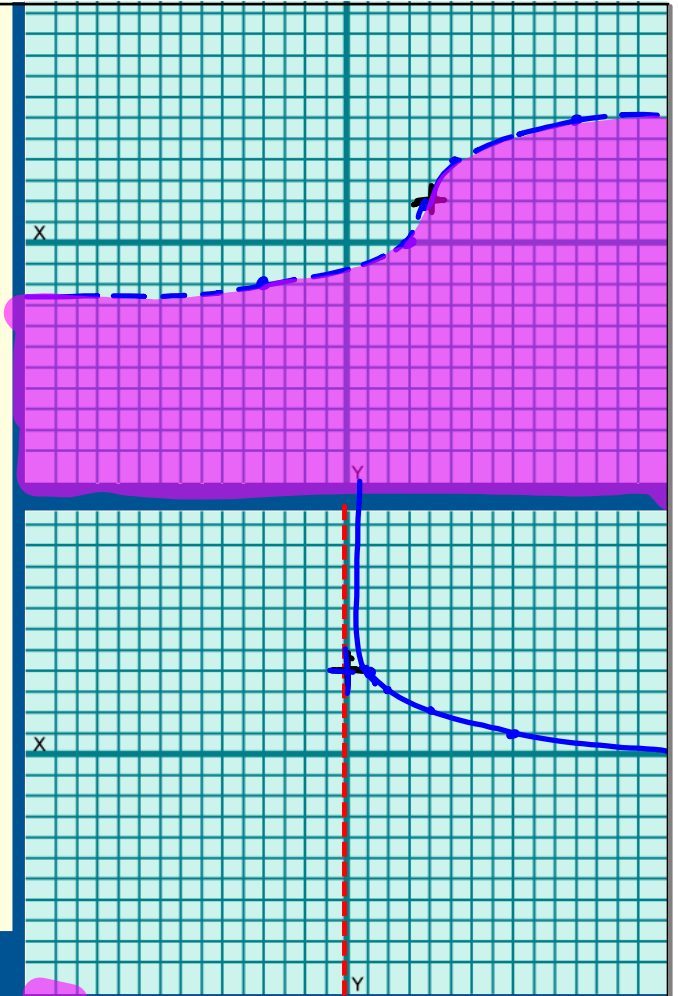
Right VP
4 2

0	0
-1	-2
-8	-4

$$y = -\log_2(x) + 4$$

VP
4

2^0	1	0
2^1	2	-1
2^2	4	-2
2^3	8	-3



$$\sqrt{2x+1} - \sqrt{x-3} = 2$$

1) Isolate a root

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

2) Square both sides

$$2x+1 = (2 + \sqrt{x-3})(2 + \sqrt{x-3}) \text{ Repeat.}$$

$$2x+1 = 4 + 2\sqrt{x-3} + 2\sqrt{x-3} + x-3$$

$$2x+1 = x+1 + 4\sqrt{x-3}$$

$$(x)^2 = (4\sqrt{x-3})^2$$

$$x^2 = 16(x-3)$$

$$x^2 = 16x - 48$$

$$x^2 - 16x - 48 = 0$$

$$(x-4)(x-12) = 0$$

$$x=4 \quad x=12$$

Must Check!

$$x=4 \quad \sqrt{9} - \sqrt{1} = 2$$

$$3 - 1 = 2 \quad \checkmark$$

$$x=12 \quad \sqrt{25} - \sqrt{9} = 2$$

$$5 - 3 = 2 \quad \checkmark$$

Solve

$$14(b) \quad |x^4 - 4x^3 - 7x^2 + 34x - 24 = 0$$

 $\rightarrow \pm 1, \pm 2, \pm 3, \pm 4, \pm 6, \pm 8, \pm 12, \pm 24$

$$\underline{\hspace{2cm}} \quad | \quad x=1$$

$$\begin{array}{r|rrrrr} 1 & 1 & -4 & -7 & 34 & -24 \\ x=1 & + & & & & \\ \hline & 1 & -3 & -10 & 24 & 0 \end{array}$$

$$(x-1) \left(x^3 - 3x^2 - 10x + 24 \right)$$

$$\underline{\cancel{x^2(x-3)} - 2(5x-12)}$$

$$\begin{array}{r|rrrr} 2 & 1 & -3 & -10 & 24 \\ + & & 2 & -2 & -24 \\ \hline & 1 & -1 & -12 & 0 \end{array}$$

$$(x-1)(x-2)(x^2 - x - 12) = 0$$

$$(x-1)(x-2)(x-4)(x+3) = 0$$

$$x = 1, 2, -3, 4$$

Rational Func.

=
* multiply by
common denom +
cancel all denoms.

$$\frac{4}{x+1} = \frac{2}{x-3} + 5$$

$$4(x-3) = 2(x+1) + 5(x+1)(x-3)$$

Rat. Func \geq, \leq

- 1) Set < 0 or > 0
- 2) Make common denom.
- 3) Test points

$$\frac{5}{x+3} \leq \frac{2}{x-4}$$

$$\frac{(x-4)5}{(x-4)(x+3)} - \frac{2(x+3)}{x-4(x+3)} \leq 0$$

$$\frac{5x-20-2x-6}{(x+3)(x-4)} \leq 0$$

$$\frac{3x-26}{(x+3)(x-4)} \leq 0$$

+	-			
-	+	-	+	
3	0	4	26	3

$$(-\infty, -3) \cup (4, 26/3]$$

PARTIAL FRACTIONS

$$\frac{\text{~~~~~}}{(x+5)(x^2+6)} = \frac{A}{x+5} + \frac{Bx+C}{x^2+6} + \frac{Dx^2+Ex+F}{x^3+8}$$

$$\frac{\text{~~~~~}}{x^3(x+4)^2} = \frac{A}{x^3} + \frac{B}{x^2} + \frac{C}{x} + \frac{D}{(x+4)^2} + \frac{E}{x+4}$$

$(x=0)^3$ $(x=0)^2$

$$16(c) \quad \frac{6x^2 - 11x - 8}{x^3 - x^2 - 2x} = \frac{A}{x} + \frac{B}{x-2} + \frac{C}{x+1}$$

$\frac{6x^2 - 11x - 8}{x^3 - x^2 - 2x} = \frac{A}{x} + \frac{B}{x-2} + \frac{C}{x+1}$

$$6x^2 - 11x - 8 = A(x-2)(x+1) + Bx(x+1) + Cx(x-2)$$

$$6x^2 - 11x - 8 = Ax^2 - Ax - 2A + Bx^2 + Bx + Cx^2 - 2Cx$$

$$6 = A + B + C$$

$$-11 = -A + B - 2C$$

$$-8 = -2A + 0 + 0$$

$$\begin{bmatrix} 1 & 1 & 1 \\ -1 & 1 & -2 \\ -2 & 0 & 0 \end{bmatrix}^{-1} \cdot \begin{bmatrix} 6 \\ -11 \\ -8 \end{bmatrix} = \begin{bmatrix} 4 \\ -1 \\ 3 \end{bmatrix}$$