Elthor x2-4x-5=7 or x-4x-5=7 Recall that f(x) = |x| is a piecewise function: f(x) = (x, x 20 D=F-B-XH2Fx F Write g(x) = |8x| + x+5 and h(x) = |2x+3| + |x-8|+6| 5-13-X (= es piecewise functions.

Solutions: First, find the key values for each function. The key values are the values that make the quantity inside I I regulation imital signature law indigent

9(x): X=0 h(x): x===3,8

h(x): (-00, -3): (-2x-3)+(8-x)+6= 11-3x (or-3x+71)

360:

(-00,0): -8x+x+5=0=7x+500 moting of

: 9(x)=(9x+5, x 20

 $(-\frac{3}{2})$: (2x+3)+(8-x)+6=x+17[8,00): (2x+3)+(x-8)+6=3x+1 $(-\infty,0): 8x+x+5 = 9x+5$ $(-\infty,0): 8x+x+5 = 9x+5$ $(-\infty,0): 8x+x+5 = 9x+5$ (3x+1, x ≥ 8 (- 7x+x x x o put essent for your confe graph 4 times, the equation most

· Solve h(x)= 18

Solution: Set each piece of h(x) = requel to 18 and solve, but make sured solve the value of x falls in the interval for that particular piece.

=> +3x+11=18 =) $x = -\frac{7}{3} < -\frac{5}{2}$ = $x = 1\frac{7}{3} < 8 \otimes$

have it solutions.

x+17=18 3x+1=18

Salve 12x+51-3 = 8

 $\therefore X = \frac{-\frac{7}{3}}{3} > 1$

=> | 2x+5|-3=8 a | 2x+5|-3=-8=> |2x+5|=5

Solve $\left| \frac{x+2}{3x-1} \right| = 5$

Solution: Either $\frac{x+z}{3x-1} = 5$ or $\frac{x+z}{3x-1} = -5$

=72x+5=11 or 2x+5=-11 8-,8=x:

=> x+2=15x-5, x+2=-15x+5 =7 14x=7, 16x=3

Solve 15x+51-9 =8

: X= 2, 3

8-=P-12+x51 & 8=P++2+x51 (=

Solve: |5x =1 = 12x+31

3 (2x+5 = 17 or (2x+5 = 1 (Both are possible)

Solution: Either 5x-1=2x+3 or 5x-1=-(2x+3)

: X= 6,-11,-2,-3

3x=4x or 7x=-2 · X- 43, -27

Absolute Value Functions Solve |x2-4x-5|=7 Either x2-4x-5=7 or x2-4x-5=-7 Recall that flat = |x| is a piecewise function: 637xp-x → x2-4x-5-7=0 => x2-4x-12=0 Wite g(x) = (8x + x+5 and h(x) = (2x+3 + 18-31+ + 2x = =) x=6,-2 as piecewise functions. = 4±252 Solutions: First, And the lear values for each function It's I Graphical Interpretation: Note x2-4x-5=0 has solutions x=5,-1 x2-4x-5+x8-10 x8-11 = 1+ (Bot absolute value 00-) :(2) 8 (\$ EX : (W) A fire functions can never ! => To graph |x2 - 4x-51, take the portion between =1,85 and reflect in the x-axis. Now draw the line y=7. y=7 New Since y=7 passes through the graph 4 times, the equation must have 4 solutions. 81 = (DN = v/o2 . a: Itow many solutions are there to |x2-4x-5|=9? |x2-4x-5|=16? we of x falls in the interval for that particular pie 81=11+48+ (= - "Wested" absolute value equation, meaning the = X = will have extra cases to deal with. Solve | |2x+5|-3| = 8 1 (= = X -|2x+5|-3=-8=> |2x+5|=-5 => |2x+5|-3=8 a 2 Impossible => | 2x+5 | = 11 Solve | x+2 | = 5 =7 2x+5=11 or 2x+5=-11 Solution: Cither 142 = 5 or 142 = -5 x = 3, -8=> x+2=15x-5, x+2=-15x+5 Solve |2x+5|-9|=8 => 14x=7, 16x=3 => 12x+51=9=8 or 12x+51-9=-8 \$ 15 EX : =) |2x+5|=17 or |2x+5|=1 (Both are possible) =7 2x+5= ±17 or 2x+5= ±1 Solve: 15x = 1 = 12x+31 : | x= 6,-11,-2,-3 Solution: Gither 5x-1= 2x+3 or 5x-1=-(2x+3)