5.4 WS KEY

Tuesday, April 12, 2022 1:48 PM

PreCalc 11

5.4 WS - Solving Radicals by Graphing

Solve each of the following by graphing.

Linear $y = mx + b$ *Quadratic* $y = a(x-p)^2 + q$ *Radical* $y = a\sqrt{x-h} + k$

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

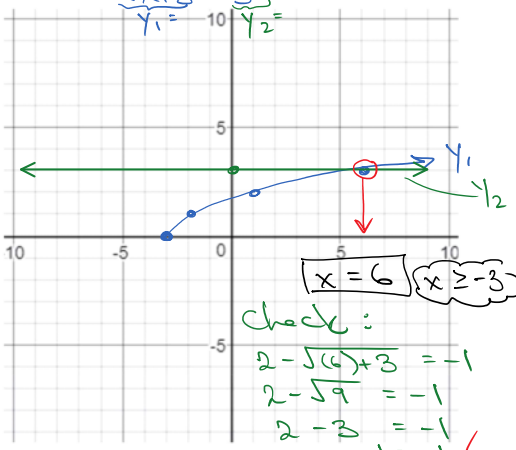
$-2 \quad -2$

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

$-1 \quad -1$

$\sqrt{x+3} = 3$

$y_1 = \quad y_2 =$



$x = 6$ $x \geq -3$

Check:

$2 - \sqrt{(6)+3} = -1$

$2 - \sqrt{9} = -1$

$2 - 3 = -1$

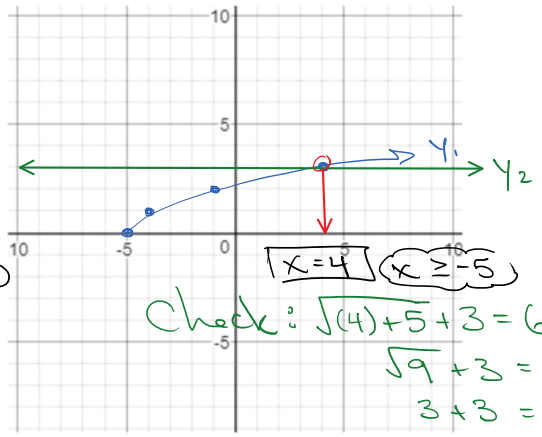
$-1 = -1$ ✓

2) $\sqrt{x+5} + 3 = 6$

$-3 \quad -3$

$\sqrt{x+5} = 3$

$y_1 \quad y_2$



$x = 4$ $x \geq -5$

Check: $\sqrt{(4)+5} + 3 = 6$

$\sqrt{9} + 3 = 6$

$3 + 3 = 6$

$6 = 6$ ✓

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

$+4 \quad +4$

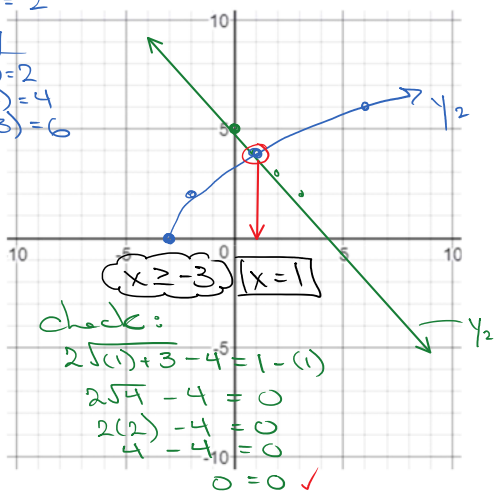
$2\sqrt{x+3} = 5 - x$

$y_1 \quad y_2 = -x + 5$

$(-3, 0)$

$a = 2$

x	y_1	y_2
1	1	$2(1) = 2$
4	2	$2(2) = 4$
9	3	$2(3) = 6$



$x \geq -3$ $x = 1$

Check:

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

$2\sqrt{4} - 4 = 0$

$2(2) - 4 = 0$

$4 - 4 = 0$

$0 = 0$ ✓

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

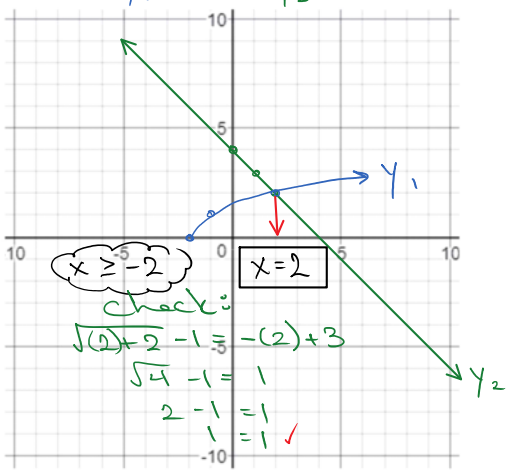
$+1 \quad +1$

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

$y_1 \quad y_2$

$(-2, 0)$

$a = 1$



$x \geq -2$ $x = 2$

Check:

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

$\sqrt{4} - 1 = 1$

$2 - 1 = 1$

$1 = 1$ ✓

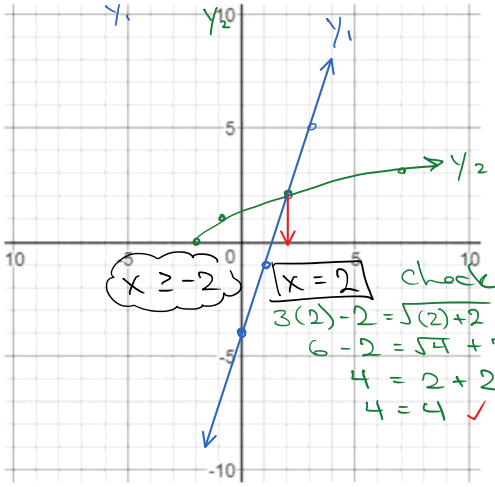
5) $3x-2=\sqrt{x+2}+2$

$-2 \quad -2$

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

$y_1 \quad y_2$

$(-2,0)$ $a=1$



check:

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

$6-2=\sqrt{4}+2$

$4=2+2$

$4=4$ ✓

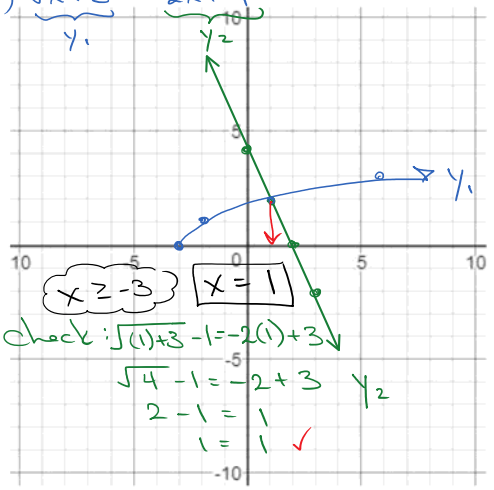
6) $\sqrt{x+3}-1=-2x+3$

$+1 \quad +1$

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

$y_1 \quad y_2$

$(-3,0)$ $a=1$



check: $\sqrt{(1)+3}-1=-2(1)+3$

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

$2-1=1$

$1=1$ ✓

$y=(-3x^2-30x)-74$

$y=-3(x^2+10x+25-25)-74$ (+75)

$y=-3(x+5)^2+1$

$(-5,1)$ $a=-3$

x	$1y$	$-3y$
±1	1	$-3(1)=-3$
±2	4	$-3(4)=-12$
±3	9	

7) $3\sqrt{x+1}-5=(x-1)^2-3$

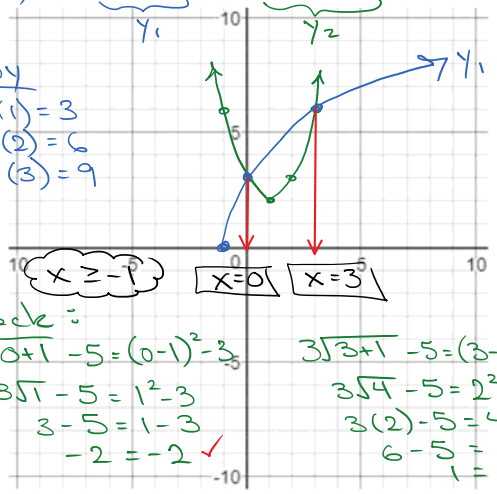
$+5 \quad +5$

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

$y_1 \quad y_2$

$(-1,0)$ $a=3$

x	$1y$	$3y$
1	1	$3(1)=3$
4	2	$3(2)=6$
9	3	$3(3)=9$



check:

$3\sqrt{0+1}-5=(0-1)^2-3$

$3\sqrt{1}-5=1^2-3$

$3-5=1-3$

$-2=-2$ ✓

$3\sqrt{3+1}-5=(3-1)^2-3$

$3\sqrt{4}-5=2^2-3$

$3(2)-5=4-3$

$6-5=1$

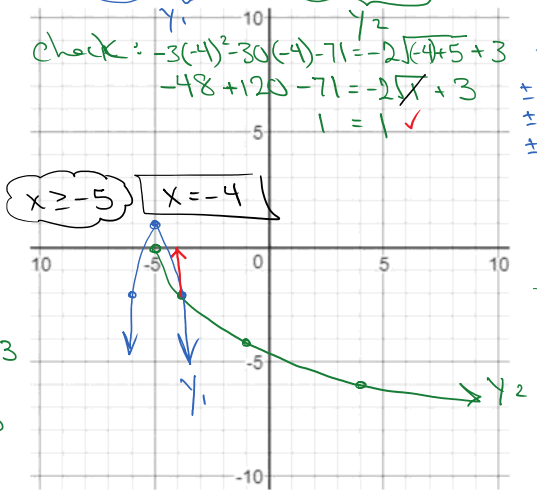
$1=1$ ✓

8) $-3x^2-30x-71=-2\sqrt{x+5}+3$

$-3 \quad -3$

$-3x^2-30x-74=-2\sqrt{x+5}$

$y_1 \quad y_2$



check: $-3(-4)^2-30(-4)-71=-2\sqrt{(-4)+5}+3$

$-48+120-71=-2\sqrt{1}+3$

$1=1$ ✓

$(-5,0)$ $a=-2$

x	$1y$	$-2y$
1	1	$-2(1)=-2$
4	2	$-2(2)=-4$
9	3	$-2(3)=-6$