4.2 Pt. 1 - Solving Radical Equations Graphically

Note Title 2012-09-30

① Determine the x and y intercepts

a) $f(x) = \sqrt{4-x} - 2$

x-int ($y = 0$)

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

$2 = \sqrt{4-x}$

$4 = 4 - x$

$x = 0$

y-int ($x = 0$)

$y = \sqrt{4} - 2$

$y = 0$

b) $f(x) = \sqrt{x^2 - 5x} - 6$

x-int ($y = 0$)

$0 = \sqrt{x^2 - 5x} - 6$

$6 = \sqrt{x^2 - 5x}$

$36 = x^2 - 5x$

$0 = x^2 - 5x - 36$

$0 = (x - 9)(x + 4)$

$x = 9, -4$

y-int ($x = 0$)

$y = 0 - 6$

$y = -6$

② Solve by graphing

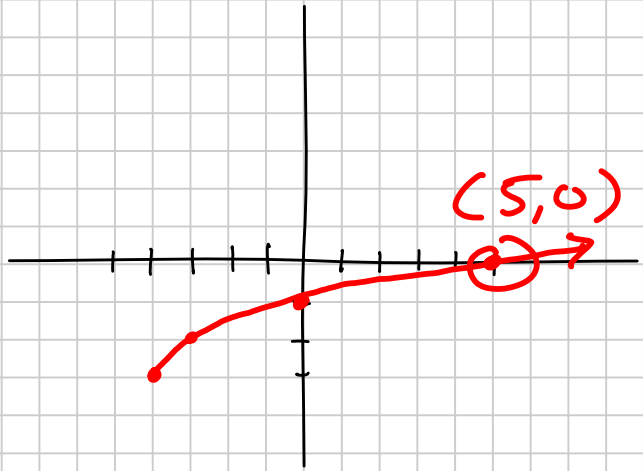
a) $\sqrt{x+4} - 3 = 0$

1. Express as $y = \sqrt{x+4} - 3$
2. Graph
3. Determine x-int ($y=0$)

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

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

x	y
-4	-3
-3	-2
0	-1
5	0



$x = 5$

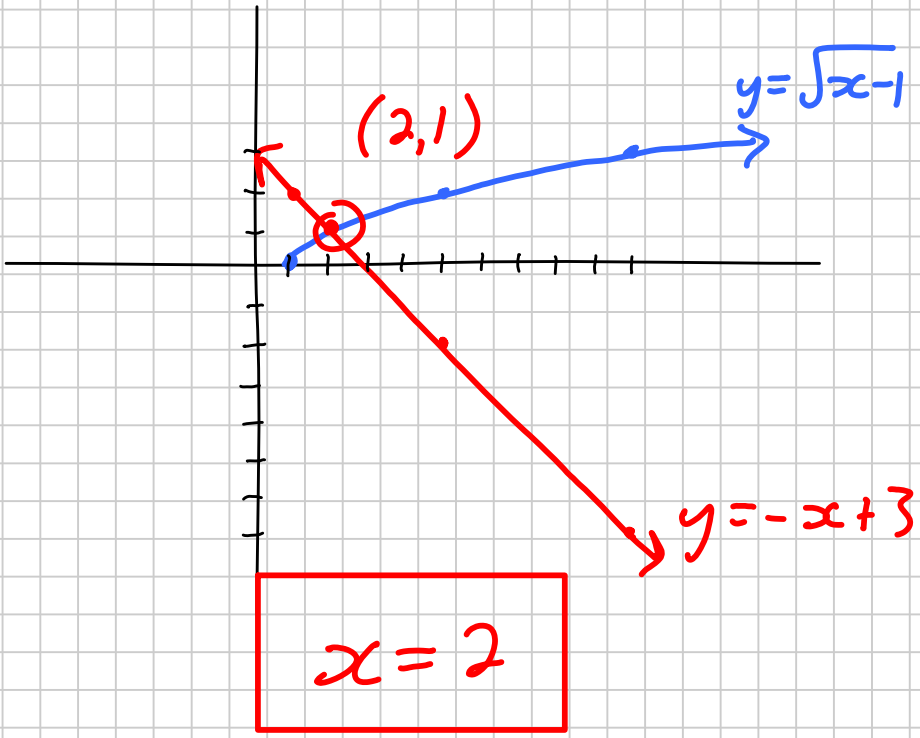
b) $\sqrt{x-1} = -x+3$

* Make 2 functions and determine intersection point(s)

$y_1 = \sqrt{x-1}$ $\quad$ $y_2 = -x+3$

x	y
1	0
2	1
5	2
10	3

x	y
1	2
2	1
5	-2
10	-7



$x = 2$

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

* Sometimes better to re-arrange to make graphing easier

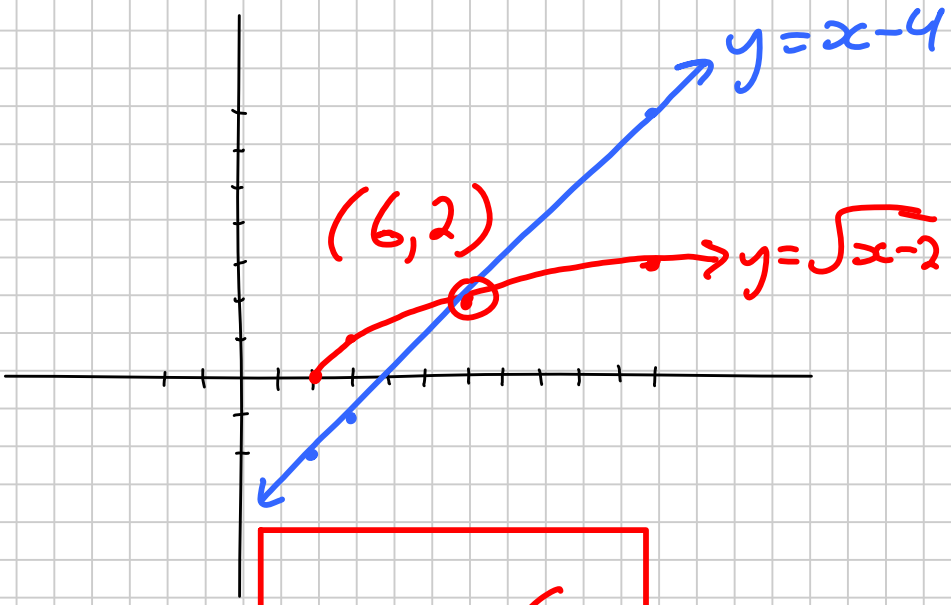
$x - 4 = \sqrt{x-2}$

$y_1 = x - 4$ $\quad y_2 = \sqrt{x-2}$

x	y
2	-2
3	-1
6	2
11	7

x	y
2	0
3	1
6	2
11	3

* Do this one first



$x = 6$

d) $\sqrt{x^2-4} = -x+2$

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* 2

3 (a, c, e ...)

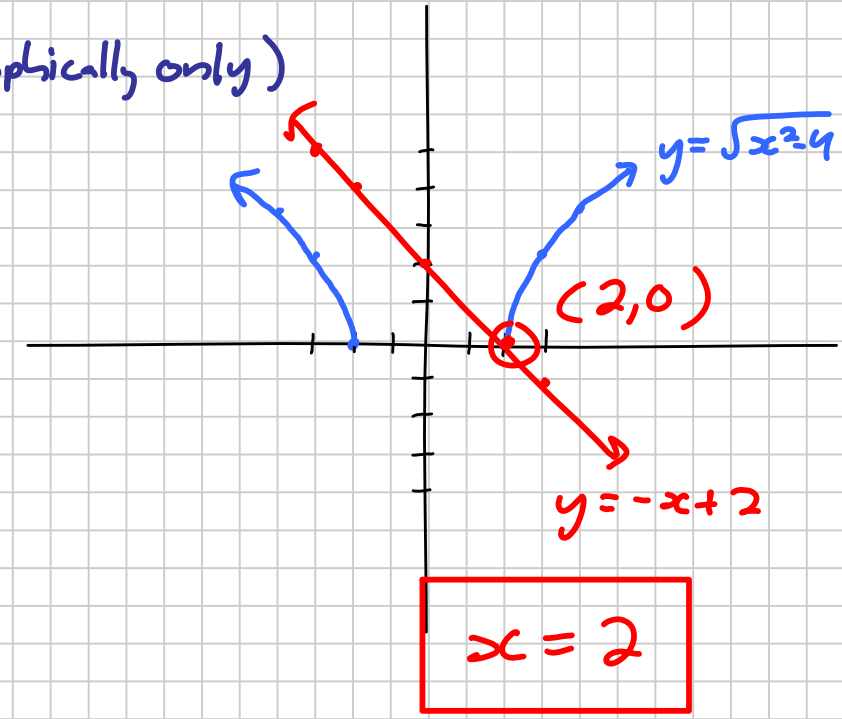
6 (graphically only)

$y_1 = \sqrt{x^2-4}$

x	y
-3	$\sqrt{5} = 2.2$
-2	0
-1	∅
0	∅
1	∅
2	0
3	$\sqrt{5} = 2.2$

$y_2 = -x+2$

x	y
-3	5
-2	4
0	2
2	0
3	-1



$x = 2$

Pg 1

\# 2

3 (a, c, e . . .)

6 (graphically only)