Name:_____ Date:_____

HW M12P Section 2.1 Graphing Radical Functions:

1. How do you tell whether if a radical function opens to the left or the right?

   If the function opens up, the radical opens right
   If the function opens down, the radical opens left

2. Given the radical function $y = \frac{1}{A}\sqrt{(B(x-C))} + D$, where "A,B,C, and D" are all positive, what the domain and range of this function?

   D: $x \geq C$ R: $y \geq D$

3. Using the same formula from above, if $A < 0, B < 0, C > 0$ *and* $D < 0$, what is the domain of the function?

   D: $x \leq C$ R: $y \leq D$

4. What are the steps in graphing a radical function? Explain:

   1. Determine if it opens up/down, left/right
   2. Find the point and graph

5. Indicate which way the radical functions open: UP/DOWN/LEFT/RIGHT? Then state the domain and range:

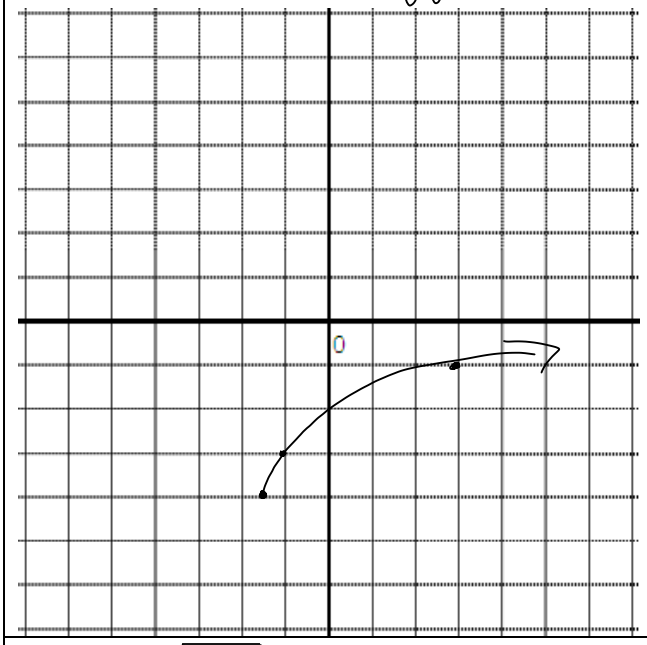
a) $y = 4 + \sqrt{3x+2}$ $y = \sqrt{3x+2} + 4$ opens up, right D: $(x \mid x \in \mathbb{R}, x \geq -\frac{2}{3})$ R: $(y \mid y \in \mathbb{R}, y \geq 4)$	b) $y = -3 - \sqrt{5x-17}$ $y = -\sqrt{5x-17} - 3$ opens down, right D: $(x \mid x \in \mathbb{R}, x \geq \frac{17}{5})$ R: $(y \mid y \in \mathbb{R}, y \leq -3)$
c) $4 - y = \sqrt{6-4x}$ $y = -\sqrt{6-4x} + 4 \rightarrow = -\sqrt{-4(x+\frac{3}{2})} + 4$ opens down, left D: $(x \mid x \in \mathbb{R}, x \leq \frac{3}{2})$ R: $(y \mid y \in \mathbb{R}, y \leq 4)$	d) $8 + 2y = 7 - \sqrt{-7x-2}$ $2y = -\sqrt{-7x-2} - 1 \rightarrow y = -\frac{1}{2}\sqrt{-7x-2} - \frac{1}{2}$ opens down, left D: $(x \mid x \in \mathbb{R}, x \leq -\frac{2}{7})$ R: $(y \mid y \in \mathbb{R}, y \leq -\frac{1}{2})$
e) $y = -\frac{2}{3}(7 - \sqrt{-6-x})$ $y = \frac{2}{3}\sqrt{-x-6} - \frac{14}{3}$ opens up, left D: $(x \mid x \in \mathbb{R}, x \leq -6)$ R: $(y \mid y \in \mathbb{R}, y \geq -\frac{14}{3})$	f) $7y + \sqrt{-(2+x)} + 9 = 0$ $\sqrt{-(x+2)} + 9 = -7y \rightarrow y = -\frac{1}{7}\sqrt{-(x+2)} - \frac{9}{7}$ opens down, left D: $(x \mid x \in \mathbb{R}, x \leq -2)$ R: $(y \mid y \in \mathbb{R}, y \leq -\frac{9}{7})$

6. Graph the following radical functions. State the domain and range:

a) $y = \sqrt{2x+3} - 4$ up, right

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

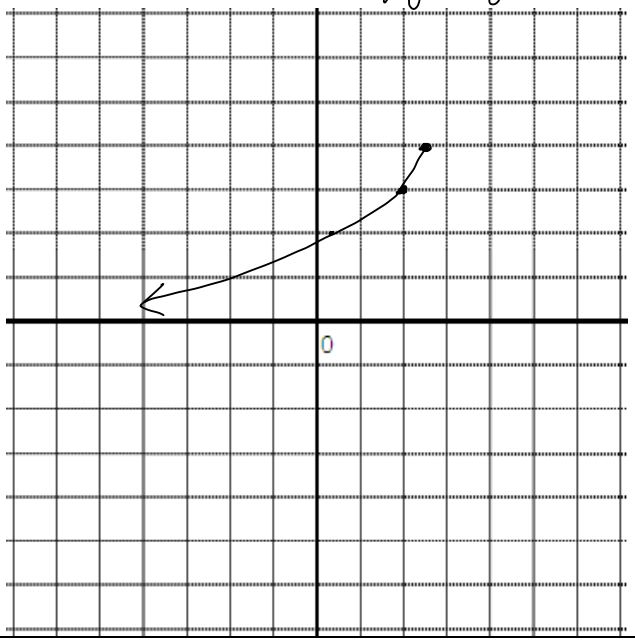
D: $(x \mid x \in \mathbb{R}, x \geq -\frac{3}{2})$ R: $(y \mid y \in \mathbb{R}, y \geq -4)$



b) $y = 4 - \sqrt{5-2x}$ down, left

$y = -\sqrt{-2(x-\frac{5}{2})} + 4$

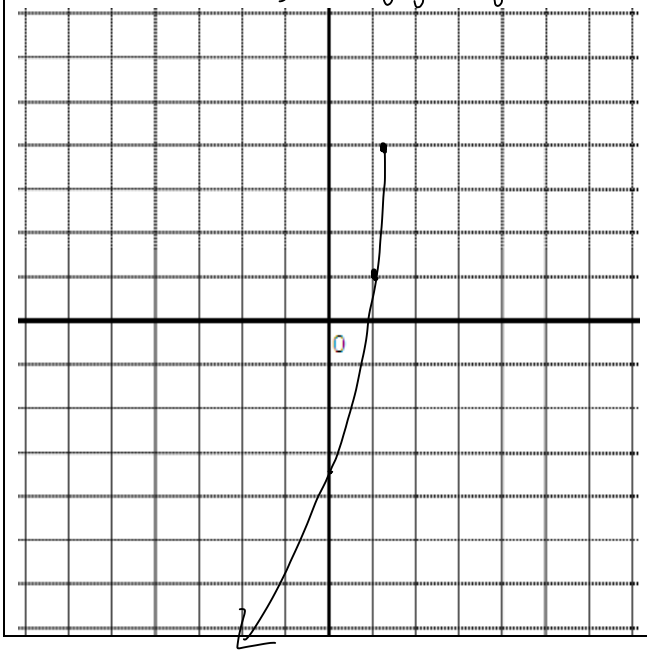
D: $(x \mid x \in \mathbb{R}, x \leq \frac{5}{2})$ R: $(y \mid y \in \mathbb{R}, y \leq 4)$



c) $y = 4 - 3\sqrt{6-5x}$

$y = -3\sqrt{-5(x-\frac{6}{5})} + 4$ down, left

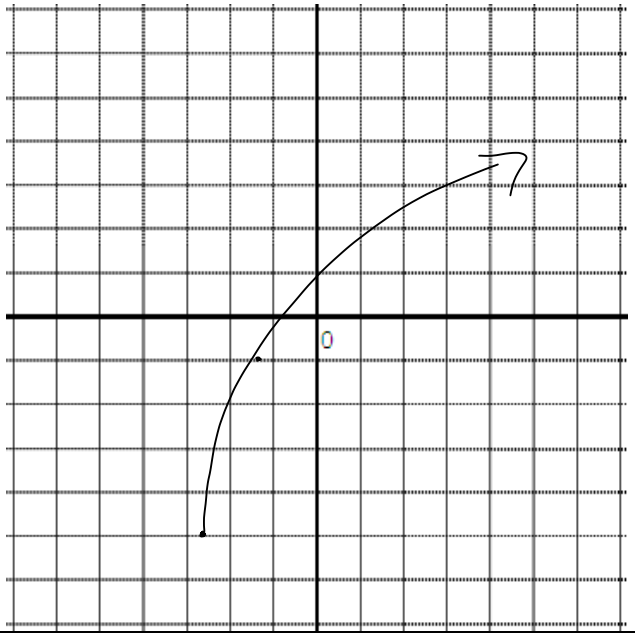
D: $(x \mid x \in \mathbb{R}, x \leq \frac{6}{5})$ R: $(y \mid y \in \mathbb{R}, y \leq 4)$



d) $y = 2\sqrt{8+3x} - 5$

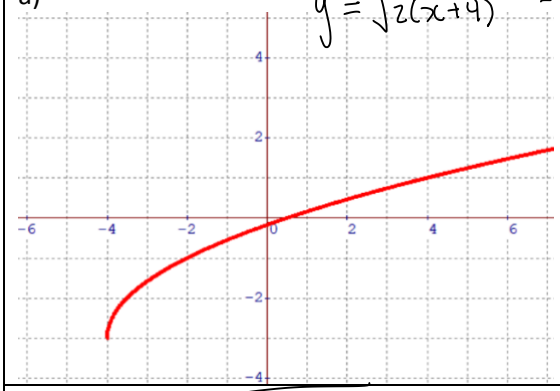
$y = 2\sqrt{3(x+\frac{8}{3})} - 5$ up, right

D: $(x \mid x \in \mathbb{R}, x \geq -\frac{8}{3})$ R: $(y \mid y \in \mathbb{R}, y \geq -5)$

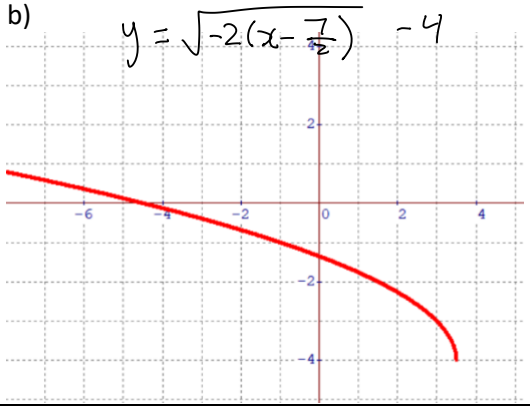


7. Find the equation of the radical functions:

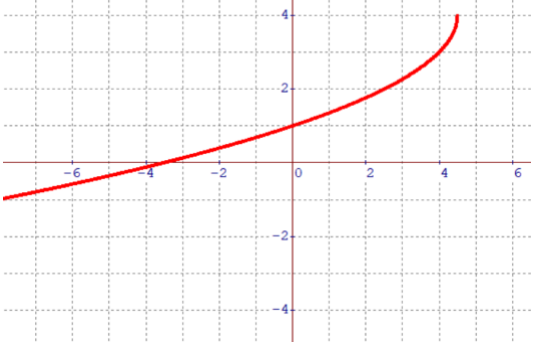
a) $y = \sqrt{2(x+4)} - 3$



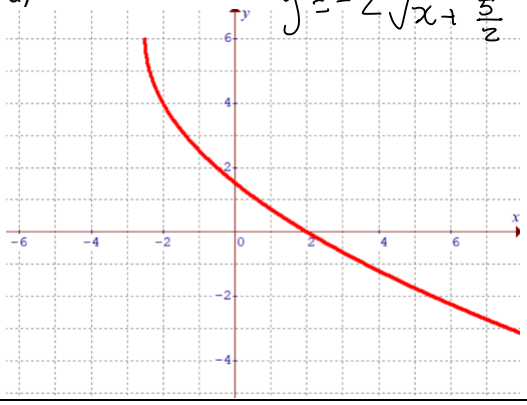
b) $y = \sqrt{-2\left(x - \frac{7}{2}\right)} - 4$



c) $y = -\sqrt{-2\left(x - \frac{9}{2}\right)} + 4$



d) $y = -2\sqrt{x + \frac{5}{2}} + 6$



8. Given the following radical functions, complete the table of values given. Give your answers accurate to atleast 2 decimal places:

a) $y = 3\sqrt{4+3x} - 10$

x	y
4	2
20	24
$\frac{1292}{3}$	98

b) $y = \frac{2}{3}\sqrt{4+6x} + 12$

x	y
0	$\frac{40}{3}$
2	$\frac{44}{3}$
$\frac{65}{24}$	15

c) $y = -2\sqrt{5-3x} + 15$

x	y
3	NA
-5	6.056
$-\frac{5}{12}$	20

d) $y = \frac{1}{9}\sqrt{2(x-4)} + 11$

x	y
5	11.157
22	$11.\overline{6}$
36.5	12