8.5 (29) $\left(\sqrt{a} - \frac{1}{2}\right)^2$

$$a - \sqrt{a} + \frac{1}{4}$$

$$\left(\sqrt{a} - \frac{1}{2}\right)\left(\sqrt{a} - \frac{1}{2}\right)$$

(33) $\left(\sqrt{3} + \frac{1}{2}\right)\left(\sqrt{2} + \frac{1}{3}\right)$

$$\sqrt{6} + \frac{\sqrt{3}}{3} + \frac{\sqrt{2}}{2} + \frac{1}{6}$$

That's it.

9.5 (43) $(3+\sqrt{2})^2 - 6(3+\sqrt{2})$

$9 + 6\sqrt{2} + 2 - 18 - 6\sqrt{2}$

$11 - 18$

-7

(47) $(7-\sqrt{5})^2 - 14(7-\sqrt{5}) + 44$

$49 - 14\sqrt{5} + 5 - 98 + 14\sqrt{5} + 44$

$54 - 98 + 44$

$-44 + 44$

0

$-7 + 0 = -7$

8.6 Equations Involving Radicals

Squaring Property of Equality

If $a = b$

then $a^2 = b^2$

solutions of $a = b$ are among the solutions of $a^2 = b^2$

So must check all answers.

because we may have introduced extraneous solutions.

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

$x - 3 = 16$

$+3 \quad +3$

$x = 19$

Check

$\sqrt{19-3} = 4$

$\sqrt{16} = 4$

$4 = 4$ ✓

---

ex $\left(\sqrt{6x+1}\right)^2 = (x-1)^2$

$(x-1)(x-1)$

$x^2 - x - x + 1$

$6x + 1 = x^2 - 2x + 1$

$-6x - 1 \qquad -6x - 1$

$0 = x^2 - 8x$

$0 = x(x-8)$

$x = 0$ ~~$x = 0$~~ $\quad x - 8 = 0$

$x = 8$

Check

$x = 0$

$\sqrt{6(0)+1} = 0 - 1$

$\sqrt{1} = -1$

$1 = -1$ oops

$x = 8$ $\sqrt{6(8)+1} = 8 - 1$

$\sqrt{48+1} = 7$

$\sqrt{49} = 7$

$7 = 7$ ✓

ex $\left(\sqrt{x+7}\right)^2 = (-5)^2$

$x+7 = 25$

$-7 \quad -7$

$x = 18$

Check

$\sqrt{18+7} = -5$

$\sqrt{25} = -5$

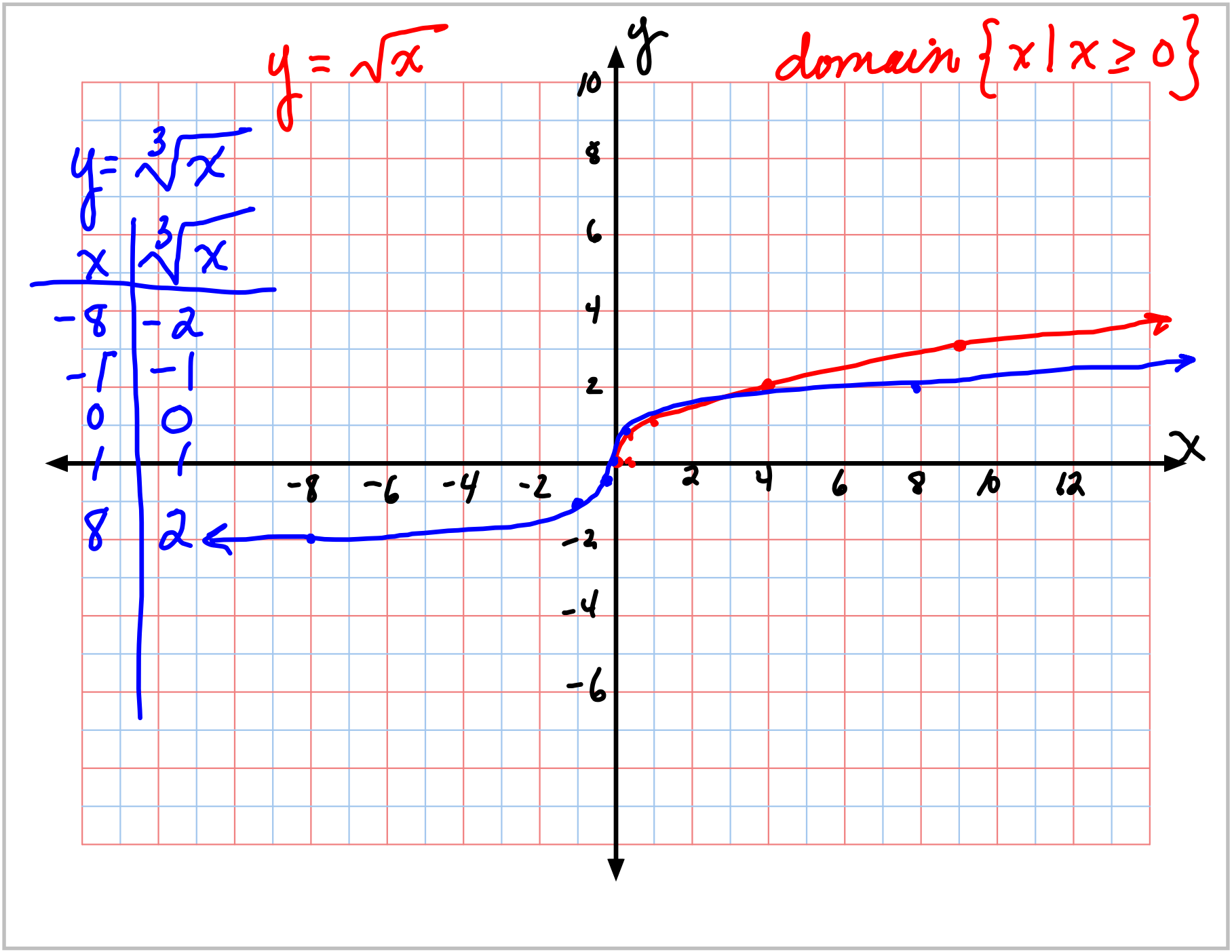
$5 = -5$

no solution

$y = \sqrt{x}$

Graphing radicals

x	y
0	0
1	1
4	2
9	3


$y = \sqrt{x}$
domain $\{x \mid x \geq 0\}$
$y = \sqrt[3]{x}$
x | $\sqrt[3]{x}$
-8 | -2
-1 | -1
0 | 0
1 | 1
8 | 2
y
x
10
8
6
4
2
-2
-4
-6
-8
-6
-4
-2
2
4
6
8
10
12

Test on chapters 7 & 8

Friday 5/4/12

FINAL - Mon 5/21

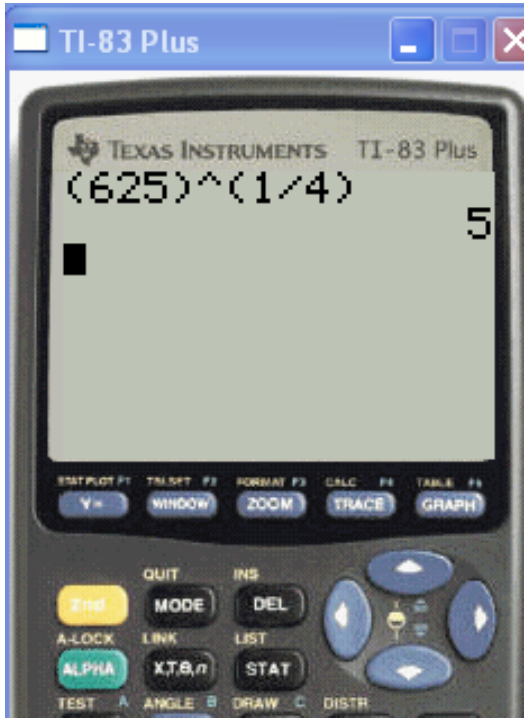
9:45 - 11:45

④

Chapt 8 Review Test

$\sqrt[4]{625}$

5



$\sqrt[4]{625} = (625)^{\frac{1}{4}}$

(5) $\sqrt{100x^2y^4}$

$10xy^2$

(11) $3\sqrt{20x^3y}$

$3\sqrt{4 \cdot 5 x^2 \cdot x \cdot y}$

$3(2x)\sqrt{5xy}$

$6x\sqrt{5xy}$

(23) $\sqrt{\frac{5}{48}} = \frac{\sqrt{5}}{\sqrt{48}} = \frac{\sqrt{5}}{\sqrt{16}\sqrt{3}} = \frac{\sqrt{5}}{4\sqrt{3}}\frac{\sqrt{3}}{\sqrt{3}}$

$48 = 8 \cdot 6$

$4(12)$

$16(3)$

$= \frac{\sqrt{15}}{4(3)} = \frac{\sqrt{15}}{12}$

(27) $\left(\frac{3}{\sqrt{3}-4}\right)\left(\frac{\sqrt{3}+4}{\sqrt{3}+4}\right) = \frac{3\sqrt{3}+12}{3-16}$

$= \frac{3\sqrt{3}+12}{-13}$

$= \frac{-(3\sqrt{3}+12)}{13}$ ✓

(31) $3\sqrt{5} - 7\sqrt{5}$

$-4\sqrt{5}$

$$\begin{array}{r} 16 \\ 5\overline{)80} \\ \underline{5} \\ 30 \end{array}$$

(35) $-2\sqrt{45} - 5\sqrt{80} + 2\sqrt{20}$

$-2\sqrt{9\cdot 5} - 5\sqrt{16\cdot 5} + 2\sqrt{4\cdot 5}$

$-2(3)\sqrt{5} - 5(4)\sqrt{5} + 2(2)\sqrt{5}$

$-6\sqrt{5} - 20\sqrt{5} + 4\sqrt{5}$

$-22\sqrt{5}$

(ex) $\sqrt{2x+1} + 10 = 8$

$-10 \quad -10$

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

must isolate the radical first

no solution

$\sqrt{2x+1} + 4 = 8$

$-4 \quad -4$

$(\sqrt{2x+1})^2 = (4)^2$

$2x+1 = 16$

$-1 \quad -1$

$\frac{2x}{2} = \frac{15}{2}$

$x = \frac{15}{2}$

Check

$\sqrt{2(\frac{15}{2})+1} + 4 = 8$

$\sqrt{16} + 4 = 8$

$4 + 4 = 8$

$8 = 8$ ✓

(19) $\dfrac{3\sqrt{120a^2b^2}}{\sqrt{25}}$

$\dfrac{3ab\sqrt{4\cdot 30}}{5}$

$\dfrac{6ab\sqrt{30}}{5}$

- 2(60) 6(20)
- 3(40) 8(15)
- 4(30)
- 5(24)

$\dfrac{16}{5}$ 16

80
