Sec 7.5 (cont)

Work Rates:

If a job can be done in t units of time, then the Rate of work is $\frac{1}{t}$ job per unit of time.

Ex: Joe can mow the lawn in 3hrs

$\frac{1}{3}$ lawn is mowed in 1 hr

Example 8

Letitia: 5hrs → $\frac{1}{5}$ of the job in 1hr

Kareem: 7hrs → $\frac{1}{7}$ of the job in 1hr

$X \leftarrow$ time to complete the job together

$$\frac{1}{5}X + \frac{1}{7}X = 1$$

Reminder

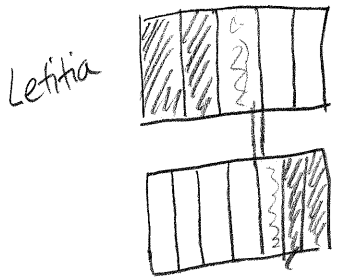
$$\frac{1}{\text{time alone}}(\text{time together}) + \frac{1}{\text{time alone}}(\text{time together}) = 1 \text{ job well done}$$

$$\cancel{35}\cdot\frac{X}{\cancel{5}} + \frac{X}{\cancel{7}} = 1^{\cdot 35} \quad \text{LCD} = 35$$

$$7X + 5X = 35$$

$$\frac{12X}{12} = \frac{35}{12}$$

$$X = 2.92 \text{ hrs}$$



$.92\text{hr} \cdot \frac{60\text{min}}{1\text{hr}}$

55.2 min

#18 $2 \cdot S = \frac{n}{2}(a+l)d$ solve for n

$$\frac{2S}{(a+l)d} = \frac{n(a+l)d}{(a+l)d}$$

$$\boxed{\frac{2S}{(a+l)d} = n}$$

$5+s$
a

#12 $\frac{1}{a} = \frac{1}{b} + \frac{1}{c}$ Solve for b r

LCD: abc

$$abc \cdot \frac{1}{a} = \frac{1}{b} \cdot abc + \frac{1}{c} \cdot abc$$

$$bc = ac + ab$$
$$-ab \qquad -ab$$

$$bc - ab = ac$$

$$\frac{b(c-a)}{(c-a)} = \frac{ac}{c-a}$$

$$b = \frac{ac}{c-a}$$

#42 $\frac{4}{3} = \frac{(5y-2)}{(2y+2)}$ or $\frac{4}{3} = \frac{8y/3}{2y}$

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

$8y + 8 = 15y - 6$

$-8y \quad +6 \quad -8y \quad +6$

$\frac{14}{7} = \frac{7y}{7}$

$2 = y$, NP = 8, MP =

RT = QT =

NP: $5y - 2$

$5(2) - 2$

$10 - 2$

8

See 8.1 Radical Expressions and Graphs

$6^2 = 36$

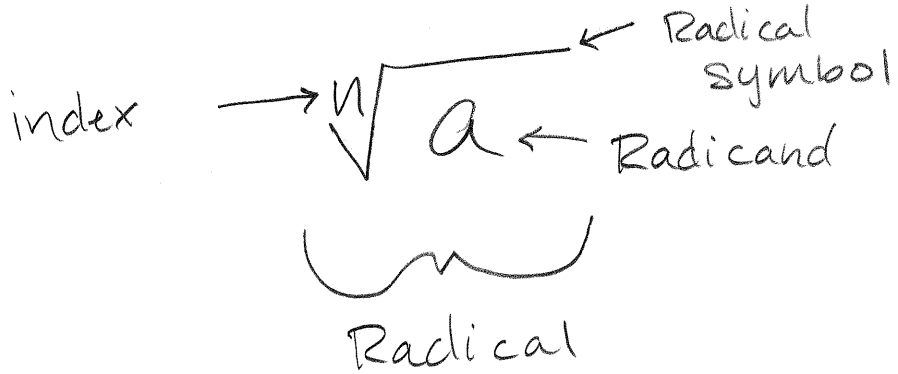
opposite of squaring is the square root

$\sqrt{36} = 6$ because $6^2 = 36$

the nth Root of a, write as $\sqrt[n]{a}$,

is a number whose n^{th} power equals a.

ie $\sqrt[n]{a} = b$ means $b^n = a$



$\sqrt[3]{8}$

Not written $3\sqrt{8}$

$8^3 \neq 83$

$\sqrt[3]{8} = ?$ $\quad \sqrt[3]{8} = 2$ $\quad$ check $2^3 = 8$

$?^3 = 8$

$\sqrt{16} = 4$ $\quad$ check $4^2 = 16$

No index written then it means implied 2

16 has two square Roots, 4, or -4

$4^2 = 16$ and $(-4)^2 = 16$

We will Let $\sqrt[n]{a}$ denote principal n^{th} Root

and $-\sqrt[n]{a}$ denote the Negative n^{th} Root

$-\sqrt{16} = -4$

What if a is a Negative?

$\sqrt{-64}$ ← Not possible — No Real Solution

$? ^2 = -64$

$\sqrt[3]{-8} = -2$

$? ^3 = -8$

$(-2)(-2)(-2)$

$+ \cdot - = -$

$\sqrt[4]{-81}$ ← No Real Solution

$? ^4 = -81$ ← same problem as Sq Root did

index is even

We cannot take the Root of a Negative

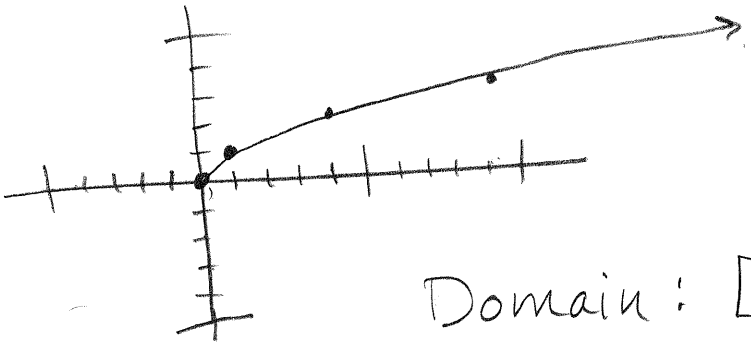
index is odd

We can take the Root of a Negative Number and the answer is Negative.

Graphs of Radical Expressions

$f(x) = \sqrt{x}$ ← Square Root function

x	y
0	0
1	1
4	2
9	3
-1	No Real #



Domain: $[0, \infty)$

Range: $[0, \infty)$