$\therefore (a)\frac{z}{a^2-b^2}+(b)\frac{x}{b^2-c^2}+(c)\frac{y}{c^2-a^2}=(a)+(b)+(c)$

$\therefore$ by inspection $x=b^2-c^2$, $y=c^2-a^2$, $z=a^2-b^2$ will satisfy the equation and reduce it to an identity, and these values are easily verified on trial.

7. (*a*) Book-work. (*b*) Let a, β; K, p be the respective roots. $\therefore a+\beta=m-a$, $a\beta=b^2$; $K+p=b-m$, $Kp=a^2$ and $a-\beta=K-p$. Take 1+5 and 1−5 and $4a\beta=(m-a)^2-(K-p)^2=4b^2$. And from 3 and 4, $(K-p)^2=(b-m^2)-4a^2$. Substitute in the last equation and $5(a^2-b^2)=2n(a-b)$ $\therefore$ &c.

8. Clear of fractions and we have to show that

$(a-b)(1+ca+bc+abc^2)+\text{anls}=(a-b)(b-c)(c-a)$

i. e. $(a-b)(ca+bc+abc^2)+\text{anls}=$ " " "; $\because (a-b)+\text{anls}=0$.

or $(ac-bc)(a+b+abc)+\text{anls}$ = (") (") (")

i. e.. $(ac-bc)(a+b)+\text{anls}=$ (") (") (") $\because (ac-bc)+\text{anls}=0$.

or $c(a^2-b^2)+\text{anls}=(a-b)(b-c)(c-a)$ which is true, $\therefore$ &c.

2ND SOLUTION.—Nr. of sum$=(a-b)(1+bc)(1+ca)+\text{anl}+\text{anl}$.

$(a-b)(b-c)(c-a)$ is one factor of three dimensions, since the sum vanishes for $a=b$, $b=c$, or $c=a$. We may expect another factor of 2 to make up the required 5 dimensions. Hence put

$(a-b)(1+bc)(1+ca)+\text{anls}=(a-b)(b-c)(c-a)\{K(a^2+b^2+c^2)+Q(ab+\&c)\}$

—See HANDBOOK, p. 229; CANADA SCHOOL JOURNAL, May No., p. 104.

Putting $c=0$ and reducing we have

$1=K(a^2+b^2)+Q(ab)$; $\therefore$ Numerator$=(a-b)(b-c)(c-a)$ only.

9. (1) I÷II gives $\frac{x^2-xy+y^2}{xy}=\frac{a}{b}$

$\therefore (x-y)^2\div(x+y)^2=(a-b)\div(a+3b)$

$\frac{x+y}{x-y}=\sqrt{\frac{a+3b}{a-b}}$

$\therefore x\div y=\{\sqrt{(a+3b)}+\sqrt{(a-b)}\}\div\{\sqrt{(a+3b)}-\sqrt{(a-b)}\}=m$, say,

$\therefore x=my$. And from II, $y=\sqrt[3]{b}\div\sqrt[3]{(m^2+m)}$ &c.

(2) $(x^4-y^4)(x+y)\div(x-y)=a$ } I.
$(x^4-y^4)(x-y)\div(x+y)=b$ } II.

$\therefore (x+y)\div(x-y)=\sqrt{a}\div\sqrt{b}=m$, suppose. (A.)

$\therefore x\div y=(m+1)\div(m-1)$; $x=y(m+1)\div(m-1)$

Substitute this value for x &c.

Or, add and subtract I & II and put $y=zx$.

(3) Cube by formula, p. 11, TEACHERS' HANDBOOK, and then $\sqrt[3]{(x-\sqrt{2})}=0$ $\therefore x=\sqrt{2}$, one solution.

Also $3\sqrt[3]{(x+\sqrt{2})}=-\sqrt{2}$, $\therefore x=-\frac{29}{27}\sqrt{2}$.

10. (1) $S=1-\frac{2}{m}+\frac{1}{m^2}-\&c$; $S\div m=\frac{1}{m}-\frac{2}{m^2}+\&c.$

$\therefore S(m+1)\div m=(m-2)\div(m-1)$, and $S=m(m-2)\div(m^2-1)$.

(2) $S=1+3+7+\&c.$, $2S=2+6+14+\&c.$

$\therefore 2S-S=-1-1-\&c.+(2^{n+1}-2)=2^{n+1}-(n+2)$.

(3) Put $n=1, 2, 3, 4$ respectively and we get the series req'd, $\frac{3}{5}, \frac{15}{17}, \frac{35}{37}, \frac{63}{65}$.

11. $(n+1)(n)(n-1)(n-2)\div\lfloor 4=9(n)(n-1)\div\lfloor 2$

$(n+1)(n-1)=108=(11+1)(11-2)$, $\therefore n=11$.

12. $(1+x)^n=1+nx+\&c.+x^n$, where n terms contains x

$\therefore$ there are $n+1$ terms altogether.

(1) $(1-x)^{-\frac{2}{3}}=1+\frac{2x}{3}+\frac{2.5.x^2}{\lfloor 2.3^2}+\frac{2.5.8.x^3}{\lfloor 3.3^3}+\frac{2.5.8.11.x}{\lfloor 4.3^4}+\&c.$

ANS. $=110x^4\div 243$.

(2) The $(n+1)^{th}$=middle term, since $2n$ is even.

This term is $\frac{\lfloor 2n}{\lfloor n \lfloor n}x^n$, which is reducible to

$1, 3, 5 \ldots\ldots\ldots\ldots (2n-1)2^n x^m \div \lfloor n$.

Communications.

To the Editor of the CANADA SCHOOL JOURNAL.

DEAR SIR,—Your criticisms in the October number of the JOURNAL, on the First Reader, Normal School Course, have given satisfaction to myself and many of my friends, for we feel that the book is not an improvement on the system of school music in use before.

The songs we have been accustomed to were of an elevating and refined nature, containing moral or patriotic sentiment, and we feel the subject has degenerated in the new books, which abound in trashy stuff such as "Mother Goose," and "Nursery Nonsense." I cannot see the force or benefit of instructing my pupils in that class of songs. It may be considered pardonable in a book arranged for very young children who have to be taught by rote, but when the same kind of matter is introduced into the Second Reader—a book for advanced pupils—I consider it, to say the least, unsuitable. I hope you will notice this point in your next issue, together with other palpable faults.

Surely in the wide range of appropriate school songs something better could be found for *Grammar School* pupils than the one on page 12, Second Reader:—

"There was a piper had a cow,
And he had naught to give her,
He pulled out his pipes and played her a tune,
And bade the cow consider.

"The cow considered very well,
And gave the piper a penny," &c.

Equally edifying with the above is the song on page 67:—

"Tom he was a piper's son,
He learned to play when he was young;
But all the tunes that he could play
Was 'Over the hills and far away.'"

These are two instances out of quite a large number of wishy-washy songs which it is quite ridiculous to expect pupils who have long since quitted Babydom to sing with taste or even to learn.

I cannot see that the Problem of Singing at Sight is any nearer being solved now than it was before. It *may* be learned from the "Normal Music Course," but certainly it will take harder study and longer time than can be devoted to it in our schools. The Ta-tōō-ing alone would occupy all the time we can spare, and it will require no small diligence on our part to learn that new language—evidently elementary Fiji. Yours, etc.,

CITY TEACHER.

Special Articles.

SOME WAYS TO ELEVATE THE TEACHERS' PROFESSION.

BY HOMER B. SPRAGUE, PH. D.

I. We should, perhaps, reverence more highly our calling. We should be more keenly alive to the fact that the most vital interests of any community is the right education of the young; that the greatest service that can be rendered to a child is to train him up in the way he should go; and that the five or six hours a day in school give the instructor a greater opportunity than the minister, or even the average parent possesses.

II. Teachers should make themselves more worthy of respect, fitting themselves with the utmost care and with endless painstaking for their work. This involves, among other things, a higher standard than now of the following requisites: