7. Given $x=3$, $y=4$, $z=-5$, find the values of

$(x+y+x)^3-3(x+y+z)(xy+yz+zx)$;

$x^2(y+z)+y^2(z+x)+z^2(x+y)+2xyz$;

$x^2(y-z)+y^2(z-x)+z^2(x-y)$;

$(5x-4z)^2+9(4x-z)^2-(13x-5z)^2$;

$(3x+4y+5z)^2+(4x+3y+12z)^2-(5x+5y+13z)^2$.

8. If $s=a+b+c$, find the values of
$(2s-a)^2+(2s-b)^2-(2s+c)^2$
when

(i.) $a=3$, $b=4$, $c=5$;

(ii.) $a=21$, $b=20$, $c=29$;

(iii.) $a=119$, $b=120$, $c=169$;

(iv.) $a=3$, $b=-4$, $c=5$;

(v.) $a=5$, $b=12$, $c=-13$.

9. If $a=1$, $b=3$, $c=5$, $d=7$, $e=9$, $f=11$, show that

$$a+b+c+d+e+f=\left(\frac{a+f}{2}\right)^2;$$

$$\frac{1}{ab}+\frac{1}{bc}+\frac{1}{cd}+\frac{1}{de}+\frac{1}{ef}=\frac{1}{2}\left(\frac{1}{a}-\frac{1}{f}\right);$$

$$\frac{1}{abc}+\frac{1}{bcd}+\frac{1}{cde}+\frac{1}{def}=\frac{1}{4}\left(\frac{1}{ab}-\frac{1}{ef}\right);$$

$$\frac{1}{abcd}+\frac{1}{bcde}+\frac{1}{cdef}=\frac{1}{6}\left(\frac{1}{abc}-\frac{1}{def}\right);$$

$$a^2+b^2+c^2-ab-bc-ca=b^2+c^2+d^2-bc-cd-db$$
$$=c^2+d^2+e^2-cd-de-ec$$
$$=d^2+e^2+f^2-de-ef-fd.$$