Substituting in the first of equations (8) the value of B obtained from the second of equations (9), and the value of $he(\theta^2-\phi^2z)$ obtained from (7), and making use of (10),

$$p_5y=-8k(k^2-t^2y)+44ty^2+8tyA.$$

Therefore, by the first of equations (9),

$$8kyt^2+\left(50y^2-\frac{2}{5}p_4y\right)t=8k^3+p_5y. \tag{11}$$

§5. Again, from the last two of equations (9), because $z=c^2+1$,

$$he^2(\theta^2+\phi^2z)=(k^2+c^2z)-(2kc+a^2z).$$

Therefore, by (10),

$$he^2(\theta^2+\phi^2z)=(k^2+t^2y)-a(2kt+y). \tag{12}$$

Similarly, from the last two of equations (9),

$$2hze^2\theta\phi=az(2kt+y)-(k^2+t^2y). \tag{13}$$

And
$$(\theta^2-\phi^2z)^2=(\theta^2+\phi^2z)^2-4z(\theta^2\phi^2).$$

Therefore, from (12) and (13),

$$(he^2)^2(\theta^2-\phi^2z)^2=\{(k^2+t^2y)-a(2kt+y)\}^2-\frac{1}{z}\{az(2kt+y)-(k^2-t^2y)\}^2$$

$$\therefore zh^2e^2(\theta^2-\phi^2z)^2=(k^2+t^2y)^2-y(2kt+y)^2.$$

Hence from the value of $he(\theta^2-\phi^2z)$ in (7),

$$(k^2+t^2y)^2-y(2kt+y)^2=za^2A^2=yA^2.$$

But, by the first of equations (9),

$$A=\frac{3y}{4}-\frac{p_4}{20}. \tag{14}$$

Therefore,
$$(k^2+t^2y)^2-y(2kt+y)^2=y\left(\frac{3y}{4}-\frac{p_4}{20}\right)^2. \tag{15}$$

And, from (11),

$$8k(k^2+t^2y)=(16k^3+p_5y)-t\left(50y^2-\frac{2}{5}p_4y\right).$$

Substitute in (15) the value of k^2+t^2y here given. The result is

$$t^2\left\{\left(50y^2-\frac{2}{5}p_4y\right)^2-256k^4y\right\}+t\left\{-2(16k^3+p_5y)\left(50y^2-\frac{2}{5}p_4y\right)-256k^3y^2\right\}$$
$$=64k^2y\left(\frac{3y}{4}-\frac{p_4}{20}\right)^2+64k^2y^3-(16k^3+p_5y)^2. \tag{16}$$