Date 25/03/2020

Now $(q-q')^2 = (q+q')^2 - 4qq'$

or $\frac{16G^2}{p^2} = (p^2+6H)^2 - 4(a_0^2 I - 3$

or $p^2(p^4+12Hp^2+36H^2) - 4p^2(a_0^2 I -$

or $p^6 + 12Hp^4 + 36H^2p^2 - 4p^2(a_0^2 I -$
$-16G^2 = 0$

or $p^6 + 12Hp^4 + 4p^2(12H^2 - a_0^2 I) -$

Above equation being a cubic
be solved generally by trial
and having found p^2 we can
the values of q and q' from
then quadratic factors of $f(x)$
known. In this way we
find the roots of $f(x)=0$ and
consequently of $f(x)=0$.

Date 25/03/2020

Book: Theory of Equation (B.S. Part-I)

Lecture on Descarte's method for th resolution of the biquadratic into quadratic factors provided by

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Descarte's Method :-

Let a biquadratic equa is given by

$$f(x) = a_0x^4 + 4a_1x^2 + 6a_2x + a_4 = 0$$

it can be reduced in the

$$f(x) = z^4 + 6Hz^2 + 4Gz + a_0^2I - 3H$$

where $z = a_0x + a_1$.

If z_1, z_2, z_3, z_4 be the roots of equation $f(z) = 0$ then z_1+z_2+z

or $(z_1+z_2) = -(z_3+z_4) = p$ (Sa

and let $z_1z_2 = q$ and $z_3z_4 = q$

$\therefore f(z) = (z^2$