And $u_1u_4=\frac{\sqrt{65}}{65}$. Therefore

$$x=\left[-\frac{9+\sqrt{65}}{260}+\sqrt{\left\{\left(\frac{9+\sqrt{65}}{260}\right)^2-\left(\frac{\sqrt{65}}{65}\right)^5\right\}}\right]^{\frac{1}{5}}$$
$$+\left[-\frac{9+\sqrt{65}}{260}-\sqrt{\left\{\left(\frac{9+\sqrt{65}}{260}\right)^2-\left(\frac{\sqrt{65}}{65}\right)^5\right\}}\right]^{\frac{1}{5}}$$
$$+\left[-\frac{9-\sqrt{65}}{260}+\sqrt{\left\{\left(\frac{9-\sqrt{65}}{260}\right)^2+\left(\frac{\sqrt{65}}{65}\right)^5\right\}}\right]^{\frac{1}{5}}$$
$$+\left[-\frac{9-\sqrt{65}}{260}-\sqrt{\left\{\left(\frac{9-\sqrt{65}}{260}\right)^2+\left(\frac{\sqrt{65}}{65}\right)^5\right\}}\right]^{\frac{1}{5}}.$$

§38. *Twelfth Example.*—Let

$$x^5+\frac{10x}{13}+\frac{3}{13}=0.$$

The equations furnishing the criterion of solvability are

$$\frac{10}{13}=\frac{5n^4(3-m)}{16+m^2},$$
$$\frac{3}{13}=\frac{n^5(22+m)}{16+m^2},$$

and they are satisfied by the values $m=-7$, $n=1$. By §25, $n=2t$. Therefore $t=\frac{1}{2}$. Therefore, from (11), $y=\frac{1}{65}$. Therefore

$$c\sqrt{z}=t\sqrt{y}=\frac{\sqrt{65}}{130}.$$

And, by (20), $yB'\sqrt{z}=-2(c^2z)(c\sqrt{z})$. Therefore $B'\sqrt{z}=-\frac{\sqrt{65}}{260}$. And, by the second of equations (9), $B=\frac{1}{52}$. Therefore

$$B+B'\sqrt{z}=\frac{5-\sqrt{65}}{260}.$$

And $u_1u_4=\frac{\sqrt{65}}{65}$. Therefore

$$x_1=\left[\frac{5-\sqrt{65}}{260}+\sqrt{\left\{\left(\frac{5-\sqrt{65}}{260}\right)^2-\left(\frac{\sqrt{65}}{65}\right)^5\right\}}\right]^{\frac{1}{5}}$$
$$+\left[\frac{5-\sqrt{65}}{260}-\sqrt{\left\{\left(\frac{5-\sqrt{65}}{260}\right)^2-\left(\frac{\sqrt{65}}{65}\right)^5\right\}}\right]^{\frac{1}{5}}$$
$$+\left[\frac{5+\sqrt{65}}{260}+\sqrt{\left\{\left(\frac{5+\sqrt{65}}{260}\right)^2+\left(\frac{\sqrt{65}}{65}\right)^5\right\}}\right]^{\frac{1}{5}}$$
$$+\left[\frac{5+\sqrt{65}}{260}-\sqrt{\left\{\left(\frac{5+\sqrt{65}}{260}\right)^2+\left(\frac{\sqrt{65}}{65}\right)^5\right\}}\right]^{\frac{1}{5}}.$$