ALGEBRAIC SUBSTITUTION

- Use Algebraic Substitution To Show That;

1 $\int x\sqrt{x+2}\,dx = \frac{2}{5}\left(\sqrt{(x+2)}\right)^5 - \frac{4}{3}\left(\sqrt{(x+2)}\right)^3 + c$

2 $\int x\sqrt{2x-3}\,dx = \frac{1}{10}\left(\sqrt{(2x-3)}\right)^5 + \frac{1}{2}\left(\sqrt{(2x-3)}\right)^3 + c$

3 $\int x^2\sqrt{1-x}\,dx = -\frac{2}{7}\left(\sqrt{(1-x)}\right)^7 + \frac{4}{5}\left(\sqrt{(1-x)}\right)^5 - \frac{2}{3}\left(\sqrt{(1-x)}\right)^3 + c$

4 $\int x^2\sqrt{2x-1}\,dx = \frac{1}{28}\left(\sqrt{(2x-1)}\right)^7 + \frac{1}{10}\left(\sqrt{(2x-1)}\right)^5 + \frac{1}{12}\left(\sqrt{(2x-1)}\right)^3 + c$

5 $\int x\sqrt[3]{x+1}\,dx = \frac{3}{7}\left(\sqrt[3]{(x+1)}\right)^7 - \frac{3}{4}\left(\sqrt[3]{(x+1)}\right)^4 + c$

6 $\int x\sqrt[3]{2x-1}\,dx = \frac{3}{28}\left(\sqrt[3]{(2x-1)}\right)^7 + \frac{3}{16}\left(\sqrt[3]{(2x-1)}\right)^4 + c$

7 $\int x(1+x)^{\frac{2}{3}}\,dx = \frac{3}{8}\left(\sqrt[3]{(x+1)}\right)^8 - \frac{3}{5}\left(\sqrt[3]{(x+1)}\right)^5 + c$

8 $\int (x-4)\sqrt{x+1}\,dx = -\frac{10}{3}\left(\sqrt{(x+1)}\right)^3 + \frac{2}{5}\left(\sqrt{(x+1)}\right)^5 + c$

9 $\int (2x+3)\sqrt{2x+1}\,dx = \frac{2}{3}\left(\sqrt{(2x+1)}\right)^3 + \frac{1}{5}\left(\sqrt{(2x+1)}\right)^5 + c$

10 $\int \frac{x}{\sqrt{x-2}}\,dx = \frac{2}{3}\left(\sqrt{(x-2)}\right)^3 + 4\sqrt{(x-2)} + c$

11 $\int \frac{x+2}{\sqrt{x+1}}\,dx = 2\sqrt{(x+1)} + \frac{2}{3}\left(\sqrt{(x+1)}\right)^3 + c$

12 $\int \frac{x^2}{\sqrt{2x-1}}\,dx = \frac{1}{20}\left(\sqrt{(2x-1)}\right)^5 + \frac{1}{6}\left(\sqrt{(2x-1)}\right)^3 + \frac{1}{4}\sqrt{(2x-1)} + c$