
مسائل محلولة فى التكامل للصف الثالث الثانوى
المجموعه الاولى

القاعده الأولى

تكامل العدد الثابت

$$\int \text{أ}\ \text{د}\text{س} = \text{أ}\ \text{س} + \text{ث}$$

مثال

$$\int 5\ \text{د}(\text{س}) = 5\ \text{س} + \text{ث}$$

$$\int -7\ \text{د}\text{س} = -7\ \text{س} + \text{ث}$$

$$\int \frac{-5}{3}\ \text{د}(\text{س}) = \frac{-5}{3}\ \text{س} + \text{ث}$$

القاعده الثانيه

$$\int \text{س}^{\text{ن}}\ \text{د}(\text{س}) = \frac{\text{س}^{\text{ن}+1}}{\text{ن}+1} + \text{ث}$$

$$\int \text{س}^{3}\ \text{د}(\text{س}) = \frac{\text{س}^{3+1}}{3+1} + \text{ث} = \frac{\text{س}^{4}}{4} + \text{ث} = \frac{1}{4}\text{س}^{4} + \text{ث}$$

$$\int \frac{1}{\text{س}^{4}}\ \text{د}\text{س} = \int \text{س}^{-4}\ \text{د}\text{س} = \frac{\text{س}^{-4+1}}{-4+1} + \text{ث} = \frac{-1}{3}\text{س}^{-3} + \text{ث}$$

$$= \frac{-1}{3\text{س}^{3}} + \text{ث}$$

$$\int \text{س}^{\frac{2}{5}}\ \text{د}\text{س} = \frac{\text{س}^{\frac{2}{5}+1}}{\frac{2}{5}+1} + \text{ث} = \frac{\text{س}^{\frac{7}{5}}}{\frac{7}{5}} + \text{ث} = \frac{5}{7}\text{س}^{\frac{7}{5}} + \text{ث}$$

القاعدة ٣

يمكن إخراج العامل الثابت من تحت إشارة التكامل أو إدخاله دون أن تتغير النتيجة

$$\int \text{أ}\ \text{ص}\ \text{د(س)} = \text{أ} \int \text{ص}\ \text{د(س)}$$

$$\int ٧\,\text{س}^{٤}\ \text{د س} = ٧ \int \text{س}^{٤}\ \text{د س} = ٧ \times \frac{\text{س}^{٤+١}}{٤+١} + \text{ث} = \frac{٧}{٥}\text{س}^{٥} + \text{ث}$$

$$\int \frac{-٢}{\text{س}^{٣}}\ \text{د س} = -٢ \int \frac{١}{\text{س}^{٣}}\ \text{د س} = -٢ \int \text{س}^{-٣}\ \text{د س} = -٢\,\frac{\text{س}^{-٣+١}}{-٣+١} + \text{ث}$$

$$= \frac{-٢}{-٢}\,\text{س}^{-٢} + \text{ث} = \frac{+١}{\text{س}^{٢}} + \text{ث}$$

$$\int \sqrt{٥}\,\text{س}^{-\frac{١}{٢}}\ \text{د س} = \sqrt{٥} \int \text{س}^{-\frac{١}{٢}}\ \text{د س} = \sqrt{٥} \times \frac{\text{س}^{\frac{١}{٢}}}{\frac{١}{٢}} + \text{ث}$$

$$= ٢\sqrt{٥}\,\text{س}^{\frac{١}{٢}} + \text{ث}$$

القاعدة ٤

تكامل المجموع الجبري لعدة دوال يساوي المجموع الجبري لتكاملات هذه الدوال.

$$\int [\text{د(س)} \pm \text{ه(س)}]\ \text{د س} = \int \text{د(س)}\ \text{د س} \pm \int \text{ه(س)}\ \text{د س}$$

$$\int (\text{س}^{٢} - ٢\text{س} + ٥)\ \text{د س} = \int \text{س}^{٢}\ \text{د س} - \int ٢\text{س}\ \text{د س} + \int ٥\ \text{د س}$$

$$= \frac{\text{س}^{٣}}{٣} - \frac{٢\text{س}^{٢}}{٢} + ٥\text{س} + \text{ث} = \frac{١}{٣}\text{س}^{٣} - \text{س}^{٢} + ٥\text{س} + \text{ث}$$

$$\int \left[\sqrt{\text{س}} - \frac{2}{\text{س}^3}\right] \text{دس} = \int \sqrt{\text{س}}\ \text{دس} - 2\int \frac{1}{\text{س}^3}\ \text{دس}$$

$$= \int \text{س}^{\frac{1}{2}}\ \text{دس} - 2\int \text{س}^{-3}\ \text{دس}$$

$$= \frac{2}{3}\text{س}^{\frac{3}{2}} - \frac{2}{-2}\text{س}^{-2} + \text{ث}$$

$$= \frac{2}{3}\text{س}^{\frac{3}{2}} + \frac{1}{\text{س}^2} + \text{ث}$$

$$\int \left(\text{س}^5 - \sqrt{2}\,\text{س} - \frac{3}{\text{س}^2}\right) \text{دس} = \int \text{س}^5\ \text{دس} - \sqrt{2}\int \text{س}\ \text{دس} - 3\int \frac{\text{دس}}{\text{س}^2}$$

$$= \frac{1}{6}\text{س}^6 - \frac{\sqrt{2}}{2}\text{س}^2 - 3\,\text{س}^{-1} + \text{ث}$$

القاعدة الخامسة

التكامل بالتعويض لإيجاد تكامل حاصل ضرب دالتين

مثال

$$\int 6\text{س}^2 (2\text{س}^3 - 6)^4\ \text{دس}$$

بوضع $\text{ع} = 2\text{س}^3 - 6 \quad \therefore \text{دع} = 6\text{س}^2\ \text{دس} \quad \therefore \text{دس} = \frac{\text{دع}}{6\text{س}^2}$

$$\int 6\text{س}^2 (2\text{س}^3 - 6)^4\ \text{دس} = \int 6\text{س}^2 \times \text{ع}^4 \times \frac{\text{دع}}{6\text{س}^2} = \int \text{ع}^4\ \text{دع}$$

$$= \frac{\text{ع}^5}{5} + \text{ث} = \frac{1}{5}(2\text{س}^3 - 6)^5 + \text{ث}$$

مثال

$$\int \text{س}^{3} (\text{س}^{4} - 2)^{5} \, \text{دس}$$

نفرض أن

$$\text{ع} = \text{س}^{4} - 2 \qquad \therefore \text{دع} = 4\,\text{س}^{3}\,\text{دس} \qquad \text{دس} = \frac{\text{دع}}{4\,\text{س}^{3}}$$

$$\int \text{س}^{3} (\text{س}^{4} - 2)^{5} \, \text{دس} = \frac{2}{4} \int \text{س}^{3} \cdot \text{ع}^{5} \frac{\text{دع}}{\text{س}^{3}} = \frac{1}{2} \int \text{ع}^{5} \cdot \text{دع}$$

$$= \frac{1}{2} \int \text{ع}^{5} \cdot \text{دع} = \frac{1}{2} \times \frac{1}{6} \text{ع}^{6} + \text{ث} = \frac{1}{12} (\text{س}^{4} - 2)^{6} + \text{ث}$$

مثال

$$\int (\text{س}^{2} + 1) \sqrt{\text{س}^{3} + 3\text{س} + 1} \, \text{دس}$$

$$\text{ع} = \text{س}^{3} + 3\text{س} + 1 \qquad \frac{\text{دع}}{\text{دس}} = 3\text{س}^{2} + 3 = 3(\text{س}^{2} + 1)$$

$$\therefore \text{دس} = \frac{\text{دع}}{3(\text{س}^{2} + 1)}$$

$$\int (\text{س}^{2} + 1) \sqrt{\text{س}^{3} + 3\text{س} + 1} \, \text{دس} = \int (\text{س}^{2} + 1) \sqrt{\text{ع}} \times \frac{\text{دع}}{3(\text{س}^{2} + 1)}$$

$$= \frac{1}{3} \int \sqrt{\text{ع}} \cdot \text{دع} = \frac{1}{3} \int \text{ع}^{\frac{1}{2}} \, \text{دع} = \frac{1}{3} \times \frac{\text{ع}^{\frac{3}{2}}}{\frac{3}{2}} + \text{ث}$$

$$= \frac{2}{9} \cdot \text{ع}^{\frac{3}{2}} + \text{ث} = \frac{2}{9} (\text{س}^{3} + 3\text{س} + 1)^{\frac{3}{2}} + \text{ث}$$

مثال

$$\int \frac{س+٤}{(س^{٢}+٨س)^{٣}}\, دس$$

$ع = س^{٢} + ٨س$ ، $دع = (٢س+٨)\, دس$

$$دس = \frac{دع}{٢س+٨} = \frac{دع}{٢(س+٤)}$$

$$\int \frac{س+٤}{(س^{٢}+٨س)^{٣}}\, دع = \frac{١}{٢}\int \frac{س+٤}{ع^{٣}} \cdot \frac{دع}{س+٤} = \frac{١}{٢}\int \frac{١}{ع^{٣}}\, دع = \frac{١}{٢}\int ع^{-٣}\, دع$$

$$= \frac{١}{٢} \cdot \frac{١}{-٢}\, ع^{-٢} + ث = \frac{-١}{٤} \cdot \frac{١}{ع^{٢}} + ث$$

$$= \frac{-١}{٤(س^{٢}+٨س)^{٢}} + ث$$

$$\int \sqrt{\frac{١+\sqrt{س}}{س}}\, دس$$

$ع = ١ + \sqrt{س} \Longrightarrow ع - ١ = \sqrt{س}$ ⇐ تربيع الطرفين

$\therefore س = (ع-١)^{٢}$ ، $دس = ٢(ع-١)\, دع$

$$\int \sqrt{\frac{ع}{(ع-١)^{٢}}} \times ٢(ع-١)\, دع = ٢\int \sqrt{ع}\, دع = ٢\int ع^{\frac{١}{٢}}\, دع$$

$$= ٢ \times \frac{ع^{\frac{٣}{٢}}}{\frac{٣}{٢}} + ث = \frac{٤}{٣}\, ع^{\frac{٣}{٢}} + ث = \frac{٤}{٣}\left(١+\sqrt{س}\right)^{٣/٢} + ث$$

$$\int \frac{س+٥}{(س+٢)^{٥}}\, ءس = \int \frac{س+٢+٣}{(س+٢)^{٥}}\, ءس = \int \frac{س+٢}{(س+٢)^{٥}}$$

$$= \int \frac{س+٢}{(س+٢)^{٥}}\, ءس + \int \frac{٣}{(س+٢)^{٥}}\, ءس$$

$$= \int \frac{1}{(س+٢)^{٤}}\, ءس + ٣\int \frac{1}{(س+٢)^{٥}}\, ءس$$

$$= \int (س+٢)^{-٤}\, ءس + ٣\int (س+٢)^{-٥}\, ءس$$

$$\frac{1}{-٣}(س+٢)^{-٣} + \frac{٣}{-٤}(س+٢)^{-٤} + ث$$

$$\frac{-1}{٣(س+٢)^{٣}} - \frac{٣}{٤}\,\frac{1}{(س+٢)^{٤}} + ث$$

$$\int س\,\sqrt[٣]{\frac{٦}{س^{٢}}+\frac{٥}{س^{٣}}}\, ءس = \int \sqrt[٣]{س^{٣}\left(\frac{٦}{س^{٢}}+\frac{٥}{س^{٣}}\right)}\, ءس$$

$$= \int \sqrt[٣]{٦س+٥}\, ءس = \int (٦س+٥)^{\frac{1}{٣}}\, ءس$$

$$\frac{1}{٦}\times\frac{(٦س+٥)^{\frac{٤}{٣}}}{\frac{٤}{٣}} = (٦س+٥)^{\frac{٤}{٣}} \times \frac{1}{\cancel{٦}_{٢}} \times \frac{\cancel{٣}}{٤} + ث$$

$$\frac{1}{٨}(٦س+٥)^{\frac{٤}{٣}} + ث = \frac{1}{٨}\sqrt[٣]{(٦س+٥)^{٤}} + ث$$

حل آخر

$$\int \text{س} \cdot \sqrt[3]{\frac{6}{\text{س}^2} + \frac{5}{\text{س}^3}} \; \text{ءس}$$

$$\int \sqrt[3]{\text{س}^3 \left(\frac{6}{\text{س}^2} + \frac{5}{\text{س}^3}\right)} \; \text{ءس} = \int (6\text{س} + 5)^{\frac{1}{3}} \; \text{ءس}$$

$$\text{ع} = 6\text{س} + 5 \qquad \text{ءع} = 6 \; \text{ءس} \Leftarrow \text{ءس} = \frac{\text{ءع}}{6}$$

$$\int \text{ع}^{1/3} \cdot \frac{\text{ءع}}{6} = \frac{1}{6} \int \text{ع}^{1/3} \; \text{ءع} = \frac{1}{6} \times \frac{\cancel{3}}{4} \; \text{ع}^{\frac{4}{3}} + \text{ث}$$

$$= \frac{1}{8} \; \text{ع}^{\frac{4}{3}} + \text{ث} = \frac{1}{8} \sqrt[3]{\text{ع}^4} + \text{ث}$$

$$\frac{1}{8} \sqrt[3]{(6\text{س} + 5)^4} + \text{ث}$$

$$\int \frac{٩س^{٢}-١}{(٣س+١)^{٤}}\,دس = \int \frac{(٣س-١)(٣س+١)}{(٣س+١)^{٤}}\,دس = \int \frac{٣س-١}{(٣س+١)^{٣}}\,دس$$

$$\int \frac{٣س-١+١-١}{(٣س+١)^{٣}}\,دس = \int \frac{٣س+١-٢}{(٣س+١)^{٣}}\,دس = \int \left(\frac{٣س+١}{(٣س+١)^{٣}} + \frac{-٢}{(٣س+١)^{٣}}\right)$$

$$= \int \frac{٣س+١}{(٣س+١)^{٣}}\,دس - ٢\int \frac{١}{(٣س+١)^{٣}}$$

$$= \int \frac{١}{(٣س+١)^{٢}}\,دس - ٢\int \frac{١}{(٣س+١)^{٣}}$$

$$= \int (٣س+١)^{-٢}\,دس - ٢\int (٣س+١)^{-٣}\,دس$$

استخدام التعويض

$$ع = ٣س+١ \quad \therefore\ دع = ٣\,دس \quad \Rightarrow\ دس = \frac{دع}{٣}$$

$$\int ع^{-٢}\,\frac{دع}{٣} - ٢\int ع^{-٣}\,\frac{دع}{٣} = \frac{١}{٣}\int ع^{-٢}\,دع - \frac{٢}{٣}\int ع^{-٣}\,دع$$

$$\frac{١}{٣} \times \frac{ع^{-١}}{-١} + \frac{٢}{٣} \times \frac{١}{-٢}\,ع^{-٢} = \frac{-١}{٣ع} + \frac{١}{٣ع^{٢}}$$

$$= \frac{-١}{٣(٣س+١)} + \frac{١}{٣(٣س+١)^{٢}}$$

مثال

$$\int \text{س}^{10}\left(\frac{2}{\text{س}}+\frac{3}{\text{س}^2}\right)^5 \text{د س} = \int (\text{س}^2)^5\left(\frac{2}{\text{س}}+\frac{3}{\text{س}^2}\right)^5 \text{د س}$$

$$\int \left[\text{س}^2\left(\frac{2}{\text{س}}+\frac{3}{\text{س}^2}\right)\right]^5 \text{د س} = \int (2\text{س}+3)^5 \text{د س}$$

$$\frac{(2\text{س}+3)^6}{6\times 2} + \text{ث} = \frac{1}{12}(2\text{س}+3)^6 + \text{ث}$$

فلو استخدمنا طريقة التعويض في هذه الحالة $\int (2\text{س}+3)^5 \text{د س}$

$$\text{ع} = 2\text{س}+5 \qquad \text{دع} = 2\,\text{د س} \qquad \text{د س} = \frac{1}{2}\,\text{دع}$$

$$\int \text{ع}^5 \times \frac{\text{دع}}{2} = \frac{1}{2}\int \text{ع}^5\,\text{دع} = \frac{1}{2}\times\frac{\text{ع}^6}{6} + \text{ث}$$

$$= \frac{\text{ع}^6}{12} + \text{ث} = \frac{1}{12}(2\text{س}+5)^6 + \text{ث}$$

مثال

$$\int \frac{\text{س}^2-4}{\text{س}+2}\,\text{د س} = \int \frac{(\text{س}-2)(\text{س}+2)}{\text{س}+2}\,\text{د س}$$

$$= \int (\text{س}-2)\,\text{د س} = \frac{1}{2}\text{س}^2 - 2\text{س} + \text{ث}$$

مثال

$$\int \frac{\text{س}^2-4}{\text{س}}\,\text{د س} = \int \frac{\text{س}^2}{\text{س}} - \frac{4}{\text{س}}\,\text{د س} = \int \text{س} - \frac{4}{\text{س}}\,\text{د س}$$

$$= \frac{1}{2}\text{س}^2 - \int 4\,\text{س}^{-1} = \frac{1}{2}\text{س}^2 - 4\,\text{لوهـ}\,\text{س}$$

مثال

$$\int \frac{\text{س}}{(\text{س}^2-4)^4}\,\text{د}\text{س} = \int \text{س}\,(\text{س}^2-4)^{-4}\,\text{د}\text{س}$$

بوضع $\text{ع} = \text{س}^2 - 4$ $\qquad$ $\text{د}\text{ع} = 2\text{س}\,.\,\text{د}\text{س}$

$$\text{د}\text{س} = \frac{\text{د}\text{ع}}{2\text{س}}$$

$$\int \text{س}\,.\,\text{ع}^{-4}\,.\,\frac{\text{د}\text{ع}}{2\text{س}} = \frac{1}{2}\int \text{ع}^{-4}\,.\,\text{د}\text{ع} = \frac{1}{2}\times\frac{1}{-3}\,\text{ع}^{-3}+\text{ث}$$

$$= \frac{-1}{6}(\text{س}^2-4)^{-3}+\text{ث} = \frac{-1}{6(\text{س}^2-4)^3}+\text{ث}$$

مثال

$$\int \frac{\text{س}^4-7\text{س}^2+12}{\text{س}^2-4}\,\text{د}\text{س} = \int \frac{(\text{س}^2-4)(\text{س}^2-3)}{(\text{س}^2-4)}\,\text{د}\text{س}$$

$$= \int (\text{س}^2-3)\,\text{د}\text{س} = \frac{1}{3}\text{س}^3 - 3\text{س} + \text{ث}$$

مثال

$$\int \frac{\text{س}^4-16}{\text{س}+2}\,\text{د}\text{س} = \int \frac{(\text{س}^2-4)(\text{س}^2+4)}{\text{س}+2}$$

$$= \int \frac{(\text{س}-2)(\text{س}+2)(\text{س}^2+4)}{\text{س}+2}\,\text{د}\text{س}$$

$$= \int (\text{س}-2)(\text{س}^2+4)\,\text{د}\text{س}$$

$$= \int \text{س}^3 - 2\text{س}^2 + 4\text{س} - 8\,\text{د}\text{س}$$

$$= \frac{1}{4}\text{س}^4 - \frac{2}{3}\text{س}^3 + \frac{4}{2}\text{س}^2 - 8\text{س} + \text{ث}$$

$$= \frac{1}{4}\text{س}^4 - \frac{2}{3}\text{س}^3 + 2\text{س}^2 - 8\text{س} + \text{ث}$$

مثال حلو قوي

$$\int \frac{س^{٣} - ٤س}{\sqrt{س^{٢} - ٤}}\, ءس = \int \frac{س(س^{٢} - ٤)}{\sqrt{س^{٢} - ٤}}\, ءس$$

$$\int \frac{س\sqrt{س^{٢} - ٤}\,\sqrt{س^{٢} - ٤}}{\sqrt{س^{٢} - ٤}}\, ءس$$

$$\int س\sqrt{س^{٢} - ٤}\, ءس = \int (س^{٢} - ٤)^{١/٢}\, ءس$$

$$\frac{(س^{٢} - ٤)^{\frac{٣}{٢}}}{٢ \times \frac{٣}{٢}} + ث = \frac{٢}{٣} \times \frac{١}{٢} (س^{٢} - ٤)^{\frac{٣}{٢}} + ث$$

$$\frac{١}{٣} (س^{٢} - ٤)^{\frac{٣}{٢}} + ث$$

مثال

$$\int (س + ٢)(س + ٣)^{١٥}\, ءس = (س + ٢ + ١ - ١)(س + ٣)^{١٥}\, ءس$$

$$= \int (س + ٣ - ١)(س + ٣)^{١٥}\, ءس = \int [(س + ٣) - ١](س + ٣)^{١٥}\, ءس$$

$$= \int (س + ٣)(س + ٣)^{١٥} - (س + ٣)^{١٥}\, ءس$$

$$= \int (س + ٣)^{١٦} - (س + ٣)^{١٥}\, ءس$$

$$\frac{١}{١٧}(س + ٣)^{١٧} - \frac{١}{١٦}(س + ٣)^{١٦} + ث$$

المسألة تنتهي هنا ودرجه لأكثر

$$(س + ٣)^{١٦}\left[\frac{١}{١٧}(س + ٣) - \frac{١}{١٦}\right] + ث$$

$$(س + ٣)^{١٦}\left[\frac{س}{١٧} + \frac{٣}{١٧} - \frac{١}{١٦}\right] + ث = (س + ٣)^{١٦}\left(\frac{س}{١٧} + \frac{٣١}{٢٧٢}\right)$$

$$(س + ٣)^{١٦}\left(\frac{١٦س + ٣١}{٢٧٢}\right) + ث = \frac{١}{٢٧٢}(س + ٣)^{١٦}(١٦س + ٣١) + ث$$

مثال

$$\int \frac{1}{\sqrt{٣س+٥}}\,دس = \int \frac{1}{(٣س+٥)^{\frac{1}{2}}}\,دس = \int (٣س+٥)^{-\frac{1}{2}}\,دس$$

$$= \frac{1}{٣} \times \frac{(٣س+٥)^{\frac{1}{2}}}{\frac{1}{2}} + ث = \frac{1}{٣} \times \frac{2}{1} (٣س+٥)^{\frac{1}{2}}$$

$$= \frac{2}{٣} (٣س+٥)^{\frac{1}{2}} = \frac{2}{٣} \left[(٣س+٥)\right]^{\frac{1}{2}} + ث$$

$$= \frac{2}{٣} \sqrt{(٣س+٥)} + ث$$

مثال

$$\int \frac{\sqrt{س} - \sqrt[٣]{س}}{س^2}\,دس = \int \frac{س^{\frac{1}{2}} - س^{\frac{1}{٣}}}{س^2}\,دس$$

$$= \int \frac{س^{\frac{1}{2}}}{س^2} - \frac{س^{\frac{1}{٣}}}{س^2}\,دس = \int س^{\frac{1}{2}} \cdot س^{-2} - س^{\frac{1}{٣}} \cdot س^{-2}\,دس$$

$$= \int س^{-\frac{٣}{2}} - س^{-\frac{٥}{٣}}\,دس = \frac{س^{-\frac{1}{2}}}{-\frac{1}{2}} - \frac{س^{-\frac{2}{٣}}}{-\frac{2}{٣}} + ث$$

$$= -2س^{-\frac{1}{2}} + \frac{٣}{2} س^{-\frac{2}{٣}} + ث$$

$$= \frac{-2}{\sqrt{س}} + \frac{٣}{2} (س^2)^{-\frac{1}{٣}} + ث$$

$$= \frac{-2}{\sqrt{س}} + \frac{٣}{2\sqrt[٣]{س^2}} + ث$$

مثال

$$\int \frac{\text{د}\text{س}}{\sqrt[5]{\text{س}^{2} + ١٦\text{س} + ٦٤}}$$

$$\text{س}^{2} + ١٦\text{س} + ٦٤ = (\text{س}+٨)(\text{س}+٨) = (\text{س}+٨)^{2}$$

$$\int \frac{\text{د}\text{س}}{\sqrt[5]{(\text{س}+٨)^{2}}} = \int \frac{\text{د}\text{س}}{\left[(\text{س}+٨)^{2}\right]^{\frac{1}{5}}} = \int \frac{\text{د}\text{س}}{(\text{س}+٨)^{\frac{2}{5}}}$$

$$= \int (\text{س}+٨)^{-\frac{2}{5}}\,\text{د}\text{س} = \frac{(\text{س}+٨)^{\frac{3}{5}}}{\frac{3}{5}} + \text{ث}$$

$$= \frac{5}{3}(\text{س}+٨)^{\frac{3}{5}} + \text{ث} = \frac{5}{3}\left[(\text{س}+٨)^{3}\right]^{\frac{1}{5}} + \text{ث}$$

$$= \frac{5}{3}\sqrt[5]{(\text{س}+٣)^{3}}$$

مثال

$$\int \sqrt[5]{(٣\text{س}-1)^{2}}\,\text{د}\text{س} = \int \left[(٣\text{س}-1)^{2}\right]^{\frac{1}{5}}\text{د}\text{س}$$

$$= \int (٣\text{س}-1)^{\frac{2}{5}}\,\text{د}\text{س}$$

$$= \frac{(٣\text{س}-1)^{\frac{7}{5}}}{\frac{7}{5}} \times \frac{1}{3} + \text{ث}$$

$$= \frac{5}{7}(٣\text{س}-1)^{\frac{7}{5}} + \text{ث}$$

$$= \frac{5}{7}\left[(٣\text{س}-1)^{7}\right]^{\frac{1}{5}} + \text{ث}$$

$$= \frac{5}{7}\sqrt[5]{(٣\text{س}-1)^{7}} + \text{ث}$$