evaluate the indefinite integral

33. $\int (4x+3)^4\,dx \to \int u^4 \cdot \frac{du}{4} \to \frac{1}{4}\int u^4\,du \to \frac{1}{4}\cdot\frac{u^5}{5} \to \frac{u^5}{20}+C \to \frac{(4x+3)^5}{20}+C$

$u = 4x+3$
$dx = du/4$

35. $\int \frac{1}{\sqrt{x+7}}\,dx \to \int (u)^{-1/2}\,du \to \frac{(u)^{1/2}}{1/2}+C \to 2\sqrt{x+7}+C$

$u = x+7$
$dx = du/1$

37. $\int x\sqrt{x^2-4}\,dx \to \int x\,u^{1/2}\,\frac{du}{2x} \to \frac{1}{2}\int u^{1/2}\,du \to \frac{1}{2}\cdot\frac{2u^{3/2}}{3} \to \frac{u^{3/2}}{3}+C$

$u = x^2-4$
$dx = du/2x$ $\to \frac{(x^2-4)^{3/2}}{3}+C$ ✓

39. $\int \frac{dx}{(x+9)^2} \to \int u^{-2}\,du \to -u^{-1}+C \to \frac{1}{-x-9}+C$

$u = x+9$
$dx = du/1$

41. $\int \frac{2x^2+x}{(4x^3+3x^2)^2}\,dx \to \int \frac{2x^2+x}{u^2}\cdot\frac{du}{6(2x^2+x)} \to \frac{1}{6}\int u^{-2}\,du \to \frac{1}{6}\cdot\frac{-1}{u}+C \to \frac{-u^{-1}}{6}+C$

$u = 4x^3+3x^2$
$dx = du/12x^2+6x$ $\to \frac{(4x^3+3x^2)^{-1}}{-6}+C$ ✓

43. $\int \frac{5x^4+2x}{(x^5+x^2)^3}\,dx \to \int \frac{5x^4+2x}{u^3}\,\frac{du}{5x^4+2x} \to \int u^{-3}\,du \to \frac{u^{-2}}{-2}+C \to \frac{(x^5+x^2)^{-2}}{-2}+C$ ✓

$u = x^5+x^2$
$dx = du/5x^4+2x$

45. $\int (3x+9)^{10}\,dx \to \int u^{10}\,\frac{du}{3} \to \frac{1}{3}\int u^{10}\,du \to \frac{1}{3}\cdot\frac{u^{11}}{11}+C \to \frac{u^{11}}{33}+C \to \frac{(3x+9)^{11}}{33}+C$

$u = 3x+9$
$dx = du/3$