

Quiz 23

$$1. (a) \int (7x-6)^3 dx \quad \begin{array}{l} u = 7x-6 \\ du = 7 dx \\ \frac{1}{7} du = dx \end{array}$$
$$\frac{1}{7} \int u^3 du = \frac{1}{28} u^4 + C = \frac{1}{28} (7x-6)^4 + C$$

$$(b) \int \frac{9}{5x+7} dx \quad \begin{array}{l} u = 5x+7 \\ du = 5 dx \\ \frac{1}{5} du = dx \end{array}$$
$$\frac{1}{5} \int \frac{9}{u} du = \frac{9}{5} \ln|u| + C = \frac{9}{5} \ln|5x+7| + C$$

$$(c) \int_0^5 \sqrt{3x+1} dx \quad \begin{array}{l} u = 3x+1 \\ du = 3 dx \\ \frac{1}{3} du = dx \end{array}$$
$$\frac{1}{3} \int_{u=1}^{u=16} \sqrt{u} du = \frac{1}{3} \cdot \frac{2}{3} u^{3/2} \Big|_1^{16} = \frac{2}{9} (64-1) =$$

$$\frac{2 \cdot 63}{9} = 14.$$