

36. Hi am 6.03.2023

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6.38a)

$$\int x \cdot \sqrt[3]{x^2} dx = \int x \cdot x^{\frac{2}{3}} dx = \int x^{\frac{5}{3}} dx = \frac{x^{\frac{8}{3}}}{\frac{8}{3}} = \frac{3 \cdot x^2 \cdot \sqrt[3]{x^2}}{8} + C$$

$$b) \int \sqrt[4]{t^3} \cdot \sqrt[3]{t^4} dt = \int t^{\frac{3}{4}} \cdot t^{\frac{4}{3}} dt = \int t^{\frac{25}{12}} dt = \frac{t^{\frac{37}{12}}}{\frac{37}{12}} + C = \frac{12 t^3 \sqrt[12]{t}}{37} + C$$

~~$\int \frac{x^3}{x^2} dx = \int x dx = \frac{x^2}{2} + C$~~
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$$c) \int \frac{x^2}{\sqrt{x}} dx = \int x^{\frac{3}{2}} dx = \frac{2}{5} x^{\frac{5}{2}} + C = \frac{2 x^2 \cdot \sqrt{x}}{5} + C$$

$$d) \int \frac{\sqrt{t}}{\sqrt[3]{t^3}} dt = \int t^{\frac{1}{2}} \cdot t^{-\frac{1}{3}} dt = \int t^{\frac{1}{6}} dt = \frac{6 t^{\frac{7}{6}}}{7} + C = \frac{6 \sqrt[6]{t^7}}{7} + C$$

6.43a-d)

$$a) \int \sqrt{2x} dx = \frac{1}{2} \int x^{\frac{1}{2}} dx = \frac{1}{2} \cdot \frac{2}{3} x^{\frac{3}{2}} = \frac{1}{3} x^{\frac{3}{2}} = \frac{1}{3} \sqrt{2x^3} + C$$

$$b) \int 2 \cdot \sqrt[3]{t^2} dt = 2 \int t^{\frac{2}{3}} dt = 2 \cdot \frac{3}{5} t^{\frac{5}{3}} = \frac{6 \sqrt[3]{t^5}}{5} + C$$

$$c) \int \sqrt{\frac{5}{u}} du = \int \frac{\sqrt{5}}{u^{\frac{1}{2}}} du = \sqrt{5} \int u^{-\frac{1}{2}} du = \sqrt{5} \cdot 2 u^{\frac{1}{2}} = 2 \sqrt{5u} + C$$

$$d) \int \frac{dx}{4 \sqrt[4]{x^3}} = \frac{1}{4} \int x^{-\frac{3}{4}} dx = \frac{1}{4} \cdot \frac{4}{1} x^{\frac{1}{4}} = \sqrt[4]{x} + C$$

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6.44 code

$$c) \int y_0 \cdot \sin(t) dt = \underline{\underline{-y_0 \cdot \cos(t) + C}}$$

$$d) \int \frac{b}{\cos^2(x)} dx = \underline{\underline{b \cdot \tan(x) + C}}$$

$$e) \int A \cdot \cos(t) dt = \underline{\underline{A \cdot \sin(t) + C}}$$