

$$45 \text{ h } \int x^2 \cos^5(x^3+5) \sin(x^3+5) \underline{dx}$$

$$u = x^3 + 5$$

$$\frac{du}{dx} = 3x^2$$

$$= \int x^2 \cos^5(u) \sin(u) \frac{du}{3x^2}$$

$$= \frac{1}{3} \int \cos^5 u \sin u \, du$$

$$w = \cos u$$

$$\frac{dw}{du} = -\sin u$$

$$= \frac{1}{3} \int w^5 \sin u \frac{dw}{-\sin u}$$

$$= -\frac{1}{3} \int w^5 \, dw$$

$$= -\frac{1}{3} \frac{w^6}{6} + C$$

$$= -\frac{1}{18} (\cos(x^3+5))^6 + C$$