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# Assignment 1

1.  $\int (5x^6 + 6x^3 + 10 \csc^2(4x)) dx$

$$\boxed{\frac{5x^7}{7} + \frac{6x^4}{4} - \frac{10}{4} \cot(4x) + C}$$

$$\left( \left( \frac{5}{7} \right) \cdot (x^7) \right) + \left( \left( \frac{6}{4} \right) \cdot (x^4) \right) - \left( \frac{10}{4} \right) \cdot \cot(4x) + C$$

2.  $\int \left( \frac{1}{\sqrt[4]{x}} - 4 \tan^2 x \right) dx =$

$$\int \left( x^{-\frac{1}{4}} - 4 \tan^2 x \right) dx =$$

$$\int x^{-\frac{1}{4}} dx = \frac{x^{\frac{3}{4}}}{\frac{3}{4}} = \frac{4}{3} \cdot x^{\frac{3}{4}}$$

$$-\int (\sec^2 x - 1) dx = -\int (\tan x - x)$$
$$= -4 \tan x + 4x$$

$$\boxed{\frac{4}{3} \cdot x^{\frac{3}{4}} - 4 \tan x + 4x + C}$$

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$$\int e^{6x} \cdot \sin(39x) dx =$$

$$4. \int \cos^{-1}(10x) dx =$$

$$\int 1 \cdot \cos^{-1}(10x) dx =$$

$$= \cos^{-1}(10x) \int 1 dx - \int (\cos^{-1}(10x)) \left( \frac{1}{10} \right) dx$$

$$= \cos^{-1}(10x) \cdot x + \int \frac{10}{\sqrt{1-100x^2}} x dx$$

$$= x \cos^{-1}(10x) - \frac{\sqrt{1-100x^2}}{10} + C$$

