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$$\left[\frac{8x^7}{7} + \frac{36x^5}{5} + \frac{54x^3}{3} + 27x \right]_0^3$$

$$= [2499 + 1749.6 + 486 + 81] - [0]$$

$$= \underline{4815.6}$$

iv. $\int_2^5 x^3 + 2x^2 - x + 5 \, dx$

$$\int_2^5 \frac{x^4}{4} + \frac{2x^3}{3} - \frac{x^2}{2} + 5x \, dx$$

$$\left[\frac{x^4}{4} + \frac{2x^3}{3} - \frac{x^2}{2} + 5x \right]_2^5$$

$$(156.25 + 83.34 - 5 + 25) - (4 + 5.34 - 0.8 + 10)$$

$$(259.9) - (18.54)$$

$$\underline{241.36}$$

b. $\int 3x \sin 5x \, dx$

$$uv - \int v \frac{du}{dx} \, dx$$

$\downarrow$
u

$\downarrow$
 $\frac{dv}{dx}$

$$\frac{du}{dx} = 3$$

$$v = -\frac{1}{5} \cos 5x$$

$$-\frac{3}{5} x \cos 5x + \int \frac{3}{5} \cos 5x \, dx$$

$$-\frac{3}{5} x \cos 5x + \frac{3}{5} \sin 5x + C$$