

$$\begin{aligned}
 2) \quad & a) \int_1^7 5 \left(f(x) - \frac{1}{2} g(x) \right) dx \\
 & = 5 \int_1^7 \left(f(x) - \frac{1}{2} g(x) \right) dx \\
 & = 5 \left[\int_1^7 f(x) dx - \frac{1}{2} \int_1^7 g(x) dx \right] \\
 & = 5 \left[3 - \frac{1}{2} \left(\int_1^3 g(x) dx + \int_3^7 g(x) dx \right) \right] \\
 & = 5 \left[3 - \frac{1}{2} (-5 - 3) \right] \\
 & = 5 \left[3 - \frac{1}{2} (-8) \right] \\
 & = 5 [3 + 4] \\
 & = 5 \cdot 7 \\
 & = 35
 \end{aligned}$$

$$\begin{aligned}
 b) \quad & \int_1^7 -2 f(x) dx + \int_1^7 6 g(x) dx \\
 & = -2 \int_1^7 f(x) dx + 6 \int_1^7 g(x) dx \\
 & = -2 \cdot 3 + 6 (-8) \\
 & = -6 - 48 \\
 & = -54
 \end{aligned}$$

$$c) \int_1^7 3(f(x) + g(x)) dx$$

$$= 3 \int_1^7 f(x) + \int_1^7 g(x)$$

$$= 3(3 + (-8))$$

$$= 3(-5)$$

$$= 3 \cdot -5$$

$$= -15$$

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$$3) \int_2^3 x dx$$

$$= \frac{x^2}{2} \Big|_2^3 = \frac{3^2}{2} - \frac{2^2}{2} = \frac{9-4}{2} = \frac{5}{2}$$

$$= 2.5 \times 5$$

$$= 12.5$$

$$6) \int_0^6 \sqrt[3]{x} dx$$

$$= \int_0^6 x^{1/3} dx = \frac{1}{3} + 1 = \frac{1}{3} + \frac{3}{3} = \frac{4}{3}$$

$$= \int_0^6 \frac{x^{4/3}}{\frac{4}{3}} = \int_0^6 \frac{3x^{4/3}}{4} = \frac{3\sqrt[3]{x^4}}{4}$$

$$= \int_0^6 \frac{3\sqrt[3]{x^4}}{4} \Big|_0^6 = \frac{3\sqrt[3]{6^4}}{4} - \frac{3\sqrt[3]{0^4}}{4} = \frac{3 \cdot 11}{4} = \frac{0}{4}$$

$$= \frac{33}{4} - \frac{0}{4} = \frac{33}{4}$$

$$= 8.25$$

$$c) \int_0^3 \frac{x}{2} + 1$$

$$= \frac{\frac{x^2}{2}}{2} = \frac{x^2}{4} \Big|_0^3 = \frac{3^2}{4} - \frac{0^2}{4}$$

$$= \frac{9}{4} = 2.25$$