Math 2B Worksheet: 5.2 The Definite Integral

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1. If $\int_2^8 f(x)\,dx = 7.3$ and $\int_2^4 f(x)\,dx = 5.9$, find $\int_4^8 f(x)\,dx$.

2. Write the expression below as a single integral in the form $\int_a^b f(x)\,dx$.

$$\int_{-2}^{2} f(x)\,dx + \int_{2}^{5} f(x)\,dx - \int_{-2}^{1} f(x)\,dx$$

3. If $\int_0^9 f(x)\,dx = 37$ and $\int_0^9 g(x)\,dx = 16$, find

$$\int_0^9 [2f(x) + 3g(x)]\,dx$$

4. Consider the function $h(s) = \sqrt{s}$.

   (a) Write an expression in sigma (summation) notation for estimating the area under the curve of $h(s)$ on the interval $[1, 5]$ using 8 rectangles and right endpoints.

   (b) Write an expression in sigma notation for finding the ***exact*** area under the curve of $h(s)$ from $[1, 5]$.