(59) If $f$ is such that $\int_0^3 f(x)dx = -1$, then if $f$ is even, $f(-x) = f(x)$, so $\int_{-3}^3 f(x)dx = \int_{-3}^0 f(x)dx + \int_0^3 f(x)dx$. We're given that the latter integral is equal to $-1$, and to evaluate the former integral we let $u = -x$. Then $du = -dx$, and $\int_{-3}^0 f(x)dx = \int_3^0 -f(u)du = \int_0^3 f(u)du = -1$. Then the sum is $-2$ as claimed. Another way to see it is that an even function is symmetric about the $y$-axis, so the signed area under $f$ on $[0, 3]$ is equal to the signed area under $f$ on $[-3, 0]$.

If $f$ is an odd function, then $\int_{-3}^3 f(x)dx = \int_{-3}^0 f(x)dx + \int_0^3 f(x)dx$, but the former integral (using the same method as above) turns out to be equal to 1, and thus the sum is 0. Again, symmetry is another way to see that this is the case.

(60) We know that on $[0, \pi]$, $\sin(x) \geq 0$ and $x \geq 0$, and that the minimum value of the two functions is 0. Thus, the signed area under the graph of $x \sin(x)$ on $[0, \pi]$ will be at least 0. Also, $x \sin(x)$ achieves its maximum value at $\frac{\pi}{2}$, which means that the integral will be bounded by $\frac{\pi}{2}\pi = \frac{\pi^2}{2}$.

(80) Let $f(x) = \sqrt{4+x}$. Then the right-hand Riemann sum approximation for $f(x)$ on the interval $[0, 5]$ is equal to $\frac{5}{n}\sum_{k=1}^{n}\sqrt{4+5k/n}$, and taking the limit as $n \to \infty$, we obtain the value $\int_0^5 \sqrt{4+x}dx$. Using substitution we can evaluate this integral, and it equals $\frac{38}{3}$. Notice that we also could have used the function $f(x) = \sqrt{x}$ and the interval $[4, 9]$, as it would have given us the exact same Riemann sum approximation.

(81) $\int_4^1 2h(z) - 5dz = -\int_1^4 2h(z) - 5dz = \int_1^4 5 - 2h(z)dz = \int_1^4 5dz - 2\int_1^4 h(z)dz = 5z\,|_1^4 - 34 = 15 - 34 = -19$.