1. Evaluate each indefinite integral.

(a) $\int 8\,dx$

(b) $\int 5x\,dx$

(c) $\int \left(x^2 + x + \sqrt{x}\right)\,dx$

(d) $\int (\cos x + \sin x)\,dx$

(e) $\int \left(\frac{1}{x} + \frac{1}{x^2} + \frac{1}{x^3}\right)\,dx$

(f) $\int e^{10x}\,dx$

(g) $\int \left(100^x - 6x^5\right)\,dx$

(h) $\int \left(2x^2 + 3x^3 + 4x^4\right)\,dx$

(i) $\int \left(x^3 - \frac{x^2}{2} - x\right)\, dx$

(j) $\int \left(x^4 + \frac{1}{x}\right)\, dx$

(k) $\int \left(x^3 - 2\right)\, dx$

(l) $\int \left(x^2 + \frac{1}{x^2}\right)\, dx$

(m) $\int \left(x + \frac{1}{\sqrt{x}}\right)\, dx$

(n) $\int \left(\pi + x^{11}\right)\, dx$

(o) $\int \left(x\sqrt{x} + \frac{1}{x\sqrt{x}}\right)\, dx$

(p) $\int \left(5^x + e^{5x}\right)\, dx$

2. Evaluate each definite integral. Leave answers in exact form.

(a) $\displaystyle\int_0^3 \left(x^2 + 4x + 3\right)\, dx$

(b) $\displaystyle\int_1^3 \frac{1}{x}\, dx$

(c) $\displaystyle\int_0^{\pi/4} \sin x\, dx$

(d) $\displaystyle\int_0^3 3e^x\, dx$

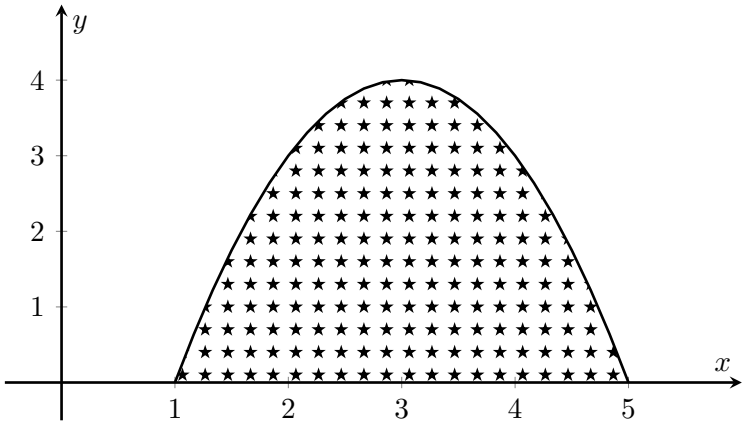
(e) $\displaystyle\int_2^5 \left(x^3 - \pi x^2\right)\, dx$

(f) $\displaystyle\int_0^{\pi/4} (\sin x + \cos x)\, dx$

(g) $\displaystyle\int_{-3}^{-1} \frac{2}{x^3}\, dx$

3. Here is a graph of the function

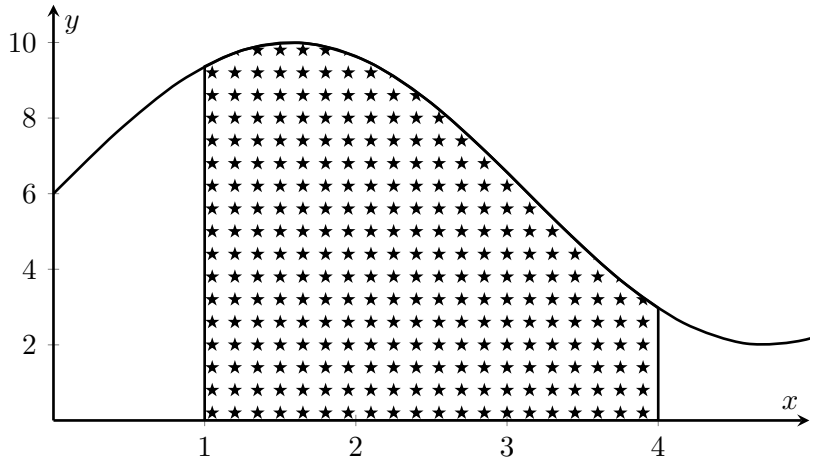
$$f(x) = -x^2 + 6x - 5.$$



Use the FTC To find the exact area of the starred region.

4. Here is a graph of the function

$$f(x) = 4\sin(x) + 6.$$



Use the FTC to find the exact area of the starred region.