# Section 1 Review

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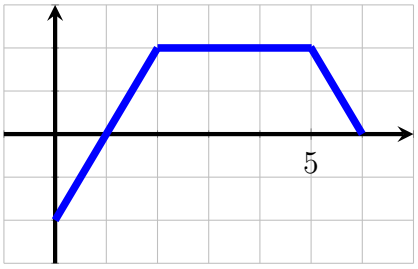
1. Compute the integrals for the function $f(x)$ graphed to the right.




   (a) $\displaystyle\int_0^1 f(x)\,dx =$ ☐

   (b) $\displaystyle\int_2^4 f(x)\,dx =$ ☐

   (c) $\displaystyle\int_0^2 f(x)\,dx =$ ☐

2. If $f(x) = \displaystyle\int_{2x}^{x^3} e^{t^2} + 1\,dt$ then find $f'(x)$.

3. * If $f(x) = e^{t^2} + 1$ then find $\displaystyle\int_{2x}^{x^3} f'(t)\,dt$.

4. Compute the following integrals.

(a) $\int x^4 + 11x^2 + 2 \, dx$

(b) $\int (3x - 5)^6 \, dx$

(c) $\int x^2 (3x^3 - 5)^6 \, dx$

(d) $\int \frac{5}{3x - 5} \, dx$

(e) $\int 5^{x+2} \, dx$

(f) $\int \frac{5x}{4 + x^2} \, dx$

(g) $\int \frac{5}{4 + x^2} \, dx$

(h) $\int \frac{5}{\sqrt{4 - x^2}} \, dx$

5. Compute the following definite integrals.

   (a) $\int_1^4 \sqrt{x}\, dx$

   (b) $\int_1^4 3x + 2\, dx$

   (c) $\int_1^2 x^2\sqrt{2x^3 - 2}\, dx$

## Challenge Problems

1. $\int 6x\sqrt{3x - 2}\, dx$

2. $\int 6x^2\sqrt{x + 4}\, dx$