

1. Use the limit definition of an integral to find $\int_0^6 4x \, dx$. (Note: Use the limit definition for credit!)

2. Use antiderivatives to calculate the following definite integrals.

$$\int_{-2}^7 \frac{x^2 + 1}{3} \, dx$$

$$\int_0^{\frac{\pi}{2}} \sin(\theta) \, d\theta$$

$$\int_1^6 \sqrt{t}(t^2 - 3) \, dt$$

$$\int_2^{106} dx$$

3. (Bonus!) Find $g'(2)$ when $g(x) = \int_2^x 15t^2 \, dt$.