1. (2 points) Suppose that a town had a population of 4000 people in 1950. If the population was growing at a rate of \(5t\) people per year, where \(t\) represents the number of years since 1950, then what was the population of the town in 1960?

2. (2 points each) Evaluate the following definite integrals.

   (a) \(\int_{2}^{10} (6x + 4) \, dx\)

   (b) \(\int_{0}^{3} e^x \, dx\)

   (c) \(\int_{0}^{1} 100x(x^2 + 1)^4 \, dx\)
3. (1 point) Which one of the following most clearly states the Fundamental Theorem of Calculus?

(a) Rate of change of a quantity from \(t = a\) to \(t = b\) equals \(\int_a^b (\text{rate of change of that quantity}) \, dt\)

(b) Rate of change of a quantity from \(t = a\) to \(t = b\) equals \(\int_b^a (\text{rate of change of that quantity}) \, dt\)

(c) Total change in a quantity from \(t = a\) to \(t = b\) equals \(\int_a^b (\text{total change in that quantity}) \, dt\)

(d) Total change in a quantity from \(t = a\) to \(t = b\) equals \(\int_b^a (\text{total change in that quantity}) \, dt\)

(e) Rate of change of a quantity from \(t = a\) to \(t = b\) equals \(\int_a^b (\text{total change in that quantity}) \, dt\)

(f) Rate of change of a quantity from \(t = a\) to \(t = b\) equals \(\int_a^b (\text{rate of change of that quantity}) \, dt\)

(g) Total change in a quantity from \(t = a\) to \(t = b\) equals \(\int_a^b (\text{rate of change of that quantity}) \, dt\)

(h) Total change in a quantity from \(t = a\) to \(t = b\) equals \(\int_b^a (\text{rate of change of that quantity}) \, dt\)

4. (1 point) Which one of the following most clearly states the Fundamental Theorem of Calculus?

(a) \(\int_a^b F(t) \, dt = F(b) - F(a)\)

(b) \(\int_a^b F(t) \, dt = F(a) - F(b)\)

(c) \(\int_a^b F(t) \, dt = F(b) - F(a)\)

(d) \(\int_a^b F(t) \, dt = F(a) - F(b)\)

(e) \(\int_a^b F'(t) \, dt = F'(b) - F'(a)\)

(f) \(\int_a^b F'(t) \, dt = F'(a) - F'(b)\)

(g) \(\int_a^b F'(t) \, dt = F(b) - F(a)\)

(h) \(\int_a^b F'(t) \, dt = F(a) - F(b)\)