

Fundamental Theorem of Calculus

Date_____ Period_____

For each problem, find $F'(x)$.

1) $F(x) = \int_{-4}^x (t - 1) dt$

2) $F(x) = \int_{-3}^x (t^2 + 2t + 3) dt$

3) $F(x) = \int_{-1}^{x^2} (-2t + 2) dt$

4) $F(x) = \int_4^{3x} (-t^3 + 11t^2 - 39t + 44) dt$

5) $F(x) = \int_2^{x^3} \frac{1}{t^3} dt$

6) $F(x) = \int_x^{x^2} (-2t - 2) dt$

7) $F(x) = \int_x^{x^2} (t^2 - 8t + 11) dt$

8) $F(x) = \int_x^{2x} \frac{2}{t} dt$

Fundamental Theorem of Calculus

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For each problem, find $F'(x)$.

1) $F(x) = \int_{-4}^x (t - 1) dt$

$$F'(x) = x - 1$$

2) $F(x) = \int_{-3}^x (t^2 + 2t + 3) dt$

$$F'(x) = x^2 + 2x + 3$$

3) $F(x) = \int_{-1}^{x^2} (-2t + 2) dt$

$$F'(x) = -4x^3 + 4x$$

4) $F(x) = \int_4^{3x} (-t^3 + 11t^2 - 39t + 44) dt$

$$F'(x) = -81x^3 + 297x^2 - 351x + 132$$

5) $F(x) = \int_2^{x^3} \frac{1}{t^3} dt$

$$F'(x) = \frac{3}{x^7}$$

6) $F(x) = \int_x^{x^2} (-2t - 2) dt$

$$F'(x) = -4x^3 - 2x + 2$$

7) $F(x) = \int_x^{x^2} (t^2 - 8t + 11) dt$

$$F'(x) = 2x^5 - 16x^3 - x^2 + 30x - 11$$

8) $F(x) = \int_x^{2x} \frac{2}{t} dt$

$$F'(x) = 0$$