Name : _____ Score : _____

Teacher : _____ Date : _____

Second Fundamental Theorem of Calculus

Find F'(x) for each problem.

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

2) $F(x) = \int_{4}^{x} (-t^2 - 3t - 3)\, dt$

3) $F(x) = \int_{5}^{2x^3} (-6t - 1)\, dt$

4) $F(x) = \int_{2}^{x} (4t^3 - t^2 - 7t - 3)\, dt$

5) $F(x) = \int_{-2}^{2x} (2t + 5)\, dt$

6) $F(x) = \int_{x}^{3x} (3t^3 + 2t^2 - t - 5)\, dt$

7) $F(x) = \int_{-1}^{2x^3} (-t - 6)\, dt$

8) $F(x) = \int_{-9}^{x} (4t - 2)\, dt$

9) $F(x) = \int_{x}^{3x^2} (-t^2 - 6t + 6)\, dt$

10) $F(x) = \int_{-5}^{3x^3} (4t^2 + 3t - 4)\, dt$

11) $F(x) = \int_{8}^{x} (4t^3 - 4t - 5)\, dt$

12) $F(x) = \int_{x}^{3x^3} (5t^3 + 4t^2 - 3t - 5)\, dt$

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Second Fundamental Theorem of Calculus

Find F'(x) for each problem.

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

$F'(x) = 78x^2 + 8x + 4$

2) $F(x) = \int_{4}^{x} (-t^2 - 3t - 3)\,dt$

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

3) $F(x) = \int_{5}^{2x^3} (-6t - 1)\,dt$

$F'(x) = -72x^5 - 6x^2$

4) $F(x) = \int_{2}^{x} (4t^3 - t^2 - 7t - 3)\,dt$

$F'(x) = 4x^3 - x^2 - 7x - 3$

5) $F(x) = \int_{-2}^{2x} (2t + 5)\,dt$

$F'(x) = 8x + 10$

6) $F(x) = \int_{x}^{3x} (3t^3 + 2t^2 - t - 5)\,dt$

$F'(x) = 240x^3 + 52x^2 - 8x - 10$

7) $F(x) = \int_{-1}^{2x^3} (-t - 6)\,dt$

$F'(x) = -12x^5 - 36x^2$

8) $F(x) = \int_{-9}^{x} (4t - 2)\,dt$

$F'(x) = 4x - 2$

9) $F(x) = \int_{x}^{3x^2} (-t^2 - 6t + 6)\,dt$

$F'(x) = -54x^5 - 108x^3 + x^2 + 42x - 6$

10) $F(x) = \int_{-5}^{3x^3} (4t^2 + 3t - 4)\,dt$

$F'(x) = 324x^8 + 81x^5 - 36x^2$

11) $F(x) = \int_{8}^{x} (4t^3 - 4t - 5)\,dt$

$F'(x) = 4x^3 - 4x - 5$

12) $F(x) = \int_{x}^{3x^3} (5t^3 + 4t^2 - 3t - 5)\,dt$

$F'(x) = 1215x^{11} + 324x^8 - 81x^5 - 5x^3 - 49x^2 + 3x + 5$