Name : _____ Score : _____

Teacher : _____ Date : _____

# Differentials

**Differentiate each function.**

1) $2\tan(-x - 5)$

2) $-3\tan(-7x + 14)$

3) $y = (-x^3 - x)^{-2}$

4) $y = x^2 - 4x$

5) $y = x + 5$

6) $y = (-4x^2 - 4)^{-3}$

7) $y = x^3 + 7x^2 + 7x - 15$

8) $y = \frac{x^3 - 3x^2 - 24x + 80}{4x}$

9) $y = \frac{x^3 + 4x^2 - 17x - 60}{x^2 - 3}$

10) $y = (5x^3 + 3x)^2$

11) $y = \frac{x^3 + 3x^2 - x - 3}{4x^3 - x}$

12) $4\tan(2x - 6)$

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# Differentials

**Differentiate each function.**

1) $2\tan(-x - 5)$

$dy = -2\sec^2(-x - 5)\,dx$

2) $-3\tan(-7x + 14)$

$dy = 21\sec^2(-7x + 14)\,dx$

3) $y = (-x^3 - x)^{-2}$

$dy = -2(-x^3 - x)^{-3}(-3x^2 - 1)dx$

4) $y = x^2 - 4x$

$dy = (2x - 4)dx$

5) $y = x + 5$

$dy = dx$

6) $y = (-4x^2 - 4)^{-3}$

$dy = -3(-4x^2 - 4)^{-4}(-8x)dx$

7) $y = x^3 + 7x^2 + 7x - 15$

$dy = (3x^2 + 14x + 7)dx$

8) $y = \frac{x^3 - 3x^2 - 24x + 80}{4x}$

$dy = \frac{2x^3 - 3x^2 - 80}{4x^2}\,dx$

9) $y = \frac{x^3 + 4x^2 - 17x - 60}{x^2 - 3}$

$dy = \frac{x^4 + 8x^2 + 96x + 51}{x^4 - 6x^2 + 9}\,dx$

10) $y = (5x^3 + 3x)^2$

$dy = 2(5x^3 + 3x)(15x^2 + 3)dx$

11) $y = \frac{x^3 + 3x^2 - x - 3}{4x^3 - x}$

$dy = \frac{-12x^4 + 6x^3 + 33x^2 - 3}{16x^6 - 8x^4 + x^2}\,dx$

12) $4\tan(2x - 6)$

$dy = 8\sec^2(2x - 6)\,dx$