

Find the derivative:

(1) $f(x) = x^9 + 8x^2 + x + 9$

(2) $f(x) = 18x^2 + 9x^3 - 4x^7 - 91$

(3) $g(x) = 80x^3 - 4x^2 + 3x + 7$

(4) $f(x) = 5x^{20} + 8x^{19} - 4x^2 + 82$

(5) $g(x) = \frac{x^2 + 6x + 4}{x - 25}$

(6) $f(x) = \frac{9x^3 + 4x^2 - 9}{9x}$

$$(7) \frac{54x + 2}{9x} + \frac{84x^2}{3x}$$

$$(8) f(x) = \frac{81x^4 - 9x^2 + 4x}{9 - x}$$

$$(9) f(y) = \frac{y^3 + 18y + 9}{y}$$

$$(10) G(x) = 19x^9 + 7x^8 - 10x^7 + 5x^2 - 8$$

Answer Key

(1) $9x^8 + 16x + 1$

(2) $36x + 27x^2 - 28x^6$

(3) $240x^2 - 8x + 3$

(4) $100x^{19} + 152x^{18} - 8x$

(5) $\frac{2x + 6}{x - 25} - \frac{x^2 + 6x + 4}{(x - 25)^2}$

(6) $\frac{18x^3 + 4x^2 + 9}{9x^2}$

(7) $\frac{2(126x^2 - 1)}{9x^2}$

(8) $\frac{324x^3 + 18x + 4}{9 - x} + \frac{x(81x^3 + 9x + 4)}{(9 - x)^2}$

(9) $\frac{2y^3 - 9}{y^2}$

(10) $171x^8 + 56x^7 - 70x^6 + 10x$