Find the indefinite integral.

(1) $\int x^3 + 9x^2 \, dx$

(2) $\int 9x^4 + 3x^2 \, dx$

(3) $\int 5x^9 - 4x^5 + 5x^3 \, dx$

(4) $\int \dfrac{3x^8}{x^2 + 2x + 2} \, dx$

(5) $\int x^2 + 3x + 4 \, dx$

(6) $\displaystyle\int 5 - x^2 + x\ dx$

(7) $\displaystyle\int (x^2 + 2)^2 + (4 - 5x)^2\ dx$

(8) $\displaystyle\int (x^{18} + 4x^{12} - 5x^5 + 90)\ dx$

(9) $\displaystyle\int \frac{x}{x^2 + 25}\ dx$

(10) $\displaystyle\int 54x^{12} - 7x^2\ dx$

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Answer Key

(1) $\frac{1}{4}x^4 + 3x^3$

(2) $\frac{9}{5}x^5 + x^3$

(3) $\frac{1}{2}x^{10} - \frac{2}{3}x^6 + \frac{5}{4}x^4 + c$

(4) $-384\ln(|x^2 + 2x + 2|) + c$

(5) $\frac{x^3}{3} + \frac{3x^2}{2} + 4x + c$

(6) $-\frac{x^3}{3} + \frac{x^2}{2} + 5x + c$

(7) $\frac{x^5}{5} + \frac{24x^3}{3} - 20x^2 + 20x + c$

(8) $\frac{x^{19}}{19} + \frac{4x^{13}}{13} - \frac{5x^6}{6} + 90x + c$

(9) $\frac{\ln(|(x^2 + 25)|)}{2} + c$

(10) $\frac{54x^{13}}{13} - \frac{7x^3}{3} + c$