

$$1. \int \frac{3x^2 - 5x + 1}{x} dx = \int 3x - 5 + x^{-1} dx = \boxed{\frac{3}{2}x^2 - 5x + \ln|x| + C}$$

$$2. \int \frac{x^4 - 5x^3 + 2x + 1}{x^3} dx = \int x - 5 + 2x^{-2} + x^{-3} dx$$

$$= \boxed{\frac{x^2}{2} - 5x - \frac{2}{x} - \frac{1}{2x^2} + C}$$

$$3. \int \frac{x^3 - 4x^2 - 3x}{x^5} dx = \int x^{-2} - 4x^{-3} - 3x^{-4} dx = \boxed{-\frac{1}{x} + \frac{2}{x^2} + \frac{1}{x^3} + C}$$

$$4. \int \frac{x^3 + 2x^2 - x - 1}{2x^2} dx = \int \frac{x}{2} + 1 - \frac{1}{2x} - \frac{1}{2x^2} dx = \int \frac{x}{2} + 1 - \frac{1}{2}x^{-1} - \frac{1}{2}x^{-2} dx$$

$$= \boxed{\frac{x^2}{4} + x - \frac{1}{2} \ln|x| + \frac{1}{2x} + C}$$

$$5. \int \frac{5x^5 - 4x^4 + 3x^3}{\sqrt{x}} dx = \int 5x^{\frac{9}{2}} - 4x^{\frac{7}{2}} + 3x^{\frac{5}{2}} dx = \boxed{\frac{10}{11}x^{\frac{11}{2}} - \frac{8}{9}x^{\frac{9}{2}} + \frac{6}{7}x^{\frac{7}{2}} + C}$$

$$6. \int \frac{2\sqrt{x} - x^5 + x^{\frac{3}{2}}}{\sqrt{x}} dx = \int 2 - x^{\frac{9}{2}} + x dx = \boxed{2x - \frac{2}{11}x^{\frac{11}{2}} + \frac{x^2}{2} + C}$$

$$7. \int \frac{2x^4 - 3x^3 + 5x^2 - 3x + 1}{\sqrt[3]{x}} dx = \int 2x^{\frac{11}{3}} - 3x^{\frac{8}{3}} + 5x^{\frac{5}{3}} - 3x^{\frac{2}{3}} + x^{-\frac{1}{3}} dx$$

$$= \boxed{\frac{3}{7}x^{\frac{14}{3}} - \frac{9}{11}x^{\frac{11}{3}} + \frac{15}{8}x^{\frac{8}{3}} - \frac{9}{5}x^{\frac{5}{3}} + \frac{3}{2}x^{\frac{2}{3}} + C}$$

$$8. \int \frac{3x^3 - x^{\frac{2}{3}} + x^{\frac{1}{4}}}{x^2} dx = \int 3x - x^{-\frac{4}{3}} + x^{-\frac{7}{4}} dx$$

$$= \boxed{\frac{3}{2}x^2 + 3x^{-\frac{1}{3}} - \frac{4}{3}x^{-\frac{3}{4}} + C}$$

$$9. \int \frac{x^2 - \sqrt[3]{x^5} + 4x^8}{7\sqrt[3]{x^2}} dx = \int \frac{1}{7}x^{\frac{4}{3}} - \frac{1}{7}x + \frac{4}{7}x^{\frac{22}{3}} dx$$

$$= \boxed{\frac{3}{49}x^{\frac{7}{3}} - \frac{x^2}{14} + \frac{12}{175}x^{\frac{25}{3}} + C}$$

$$10. \int \frac{6x^{\frac{2}{3}} - 4\sqrt{x} + 5x^3 - 2\sqrt[3]{x^4}}{2\sqrt[3]{x}} dx$$

$$= \int 3x^{\frac{1}{3}} - 2x^{\frac{1}{6}} + \frac{5}{2}x^{\frac{8}{3}} - x dx$$

$$= \boxed{\frac{9}{4}x^{\frac{4}{3}} - \frac{12}{7}x^{\frac{7}{6}} + \frac{15}{22}x^{\frac{11}{3}} - \frac{x^2}{2} + C}$$