

AP Calculus AB
Integration Practice

Name Key

$$1. \int -\frac{9}{x^4} dx$$

$$\int -9x^{-4} dx$$

$$3x^{-3} + C$$

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

$$\int 4x^3 - x^{-2} dx$$

$$x^4 + x^{-1} + C$$

$$3. \int \frac{2}{\sqrt{x}} - 5 dx$$

$$\int 2x^{-1/2} - 5 dx$$

$$4x^{1/2} - 5x + C$$

$$4. \int \frac{1}{x\sqrt{x}} dx$$

$$\int x^{-3/2} dx$$

$$-2x^{-1/2} + C$$

$$5. \int 2\sin x + 3\cos x dx$$

$$-2\cos x + 3\sin x + C$$

$$6. \int \sqrt[3]{x^2} dx$$

$$\int x^{2/3} dx$$

$$\frac{3}{5} x^{5/3} + C$$

$$7. \int (1 - \csc(t) \cot(t)) dt$$

$$t + \csc(t) + C$$

$$8. \int \frac{x^2 + x + 1}{\sqrt{x}} dx$$

$$\int (x^2 + x + 1)x^{-1/2} dx$$

$$\int x^{3/2} + x^{1/2} + x^{-1/2} dx$$

$$\frac{2}{5} x^{5/2} + \frac{2}{3} x^{3/2} + 2x^{1/2} + C$$

$$9. \int (\sqrt[4]{x^3} + 1) dx$$

$$\int x^{3/4} + 1 dx$$

$$\frac{4}{7} x^{7/4} + x + C$$

$$10. \int \frac{x^2 - 1}{x^2} dx$$

$$\int (x^2 - 1)x^{-2} dx$$

$$\int x^{1/2} - x^{-3/2} dx$$

$$\frac{2}{3} x^{3/2} + 2x^{-1/2} + C$$

$$11. \int (x^3 + 2) dx$$

$$\frac{1}{4} x^4 + 2x + C$$

$$12. \int 8 dt$$

$$8t + C$$

$$13. \int (t^2 - \sin t) dt$$

$$\frac{1}{3} t^3 + \cos t + C$$

$$14. \int (x+1)(3x-2) dx$$

$$\int 3x^2 - 2x + 3x - 2 dx$$

$$\int 3x^2 + x - 2 dx$$

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

$$15. \int (2t^2 - 1)^2 dt$$

$$\int 4t^4 - 4t^2 + 1 dt$$

$$\frac{4}{5} t^5 - \frac{4}{3} t^3 + t + C$$