

แบบฝึกหัดบทที่ 5 วิชาแคลคูลัสสำหรับวิทยาศาสตร์ชีวภาพ 1

จงหาค่าของปริพันธ์ไม่จำกัดเขตต่อไปนี้

1. $\int (5 - 6x) dx$

2. $\int \left(\frac{t^2}{2} - 4e^t \right) dt$

3. $\int (1 - x^2 - 3x^6) dx$

4. $\int \left(\frac{1}{5} - \frac{2}{x^3} + 2x \right) dx$

5. $\int x^{-5/4} dx$

6. $\int \left(\frac{\sqrt{x}}{2} + \frac{2}{\sqrt{x}} \right) dx$

7. $\int \left(\frac{1}{7} - \frac{1}{x^{5/4}} \right) dx$

8. $\int x^{-3} (x + 1) dx$

9. $\int \frac{4 + \sqrt{x}}{x^3} dx$

10. $\int (-5 \sin x) dx$

11. $\int 3 \cos 5x dx$

12. $\int \left(\frac{-\sec^2 x}{3} \right) dx$

13. $\int \frac{2}{5} \sec x \tan x dx$

14. $\int \frac{1}{2} (\csc^2 x - \csc x \cot x) dx$

$$15. \int (2 \cos 2x - 3 \sin 3x) dx$$

$$16. \int \frac{1 - \cos 6x}{2} dx$$

$$17. \int (1 + \sin^2 x \csc x) dx$$

$$18. \int \frac{\sec x + \cos x}{2 \cos x} dx$$

$$19. \int \frac{\csc x}{\csc x - \sin x} dx$$

$$20. \int \cos x (\tan x + \sec x) dx$$

จงใช้วิธีการแทนค่าหาค่าของปริพันธ์ไม่จำกัดเขตต่อไปนี้

$$1. \int (4 - 3x)^{10} dx$$

$$2. \int x^3 \sqrt{5 + x^4} dx$$

$$3. \int \sin\left(\frac{x}{4}\right) dx$$

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

$$5. \int \frac{dx}{1 + 16x^2}$$

$$6. \int \frac{x^2 + 1}{\sqrt{x^3 + 3x}} dx$$

$$7. \int \frac{\sin(1/x)}{3x^2} dx$$

$$8. \int e^{\sin x} \cos x dx$$

$$9. \int x^3 e^{x^4} dx$$

10. $\int \frac{e^x + e^{-x}}{e^x - e^{-x}} dx$

11. $\int \frac{e^x}{1 + e^{2x}} dx$

12. $\int \frac{x}{x^4 + 1} dx$

13. $\int \cos 2x \sin^5 2x dx$

14. $\int x \sec^2(x^2) dx$

15. $\int \frac{\cos 4x}{(1 + 2 \sin 4x)^4} dx$

16. $\int \cos 4x \sqrt{2 - \sin 4x} dx$

17. $\int \frac{\sin x}{\cos^2 x + 1} dx$

18. $\int (\sin(\sin x)) \cos x dx$

19. $\int \frac{dx}{\sqrt{x} e^{2\sqrt{x}}}$

20. $\int (\ln(e^x) + \ln(e^{-x})) dx$

จงหาค่าของปริพันธ์จำกัดเขตต่อไปนี้

1. $\int_1^3 (2x - 1)^4 dx$

2. $\int_0^4 3x \sqrt{25 - x^2} dx$

3. $\int_0^1 (x + 2)(x + 1)^5 dx$

4. $\int_0^{\pi/4} \tan^2 x \sec^2 x dx$

5. $\int_0^1 x^3 \sqrt{x^2 + 3} dx$
6. $\int_e^{e^2} \frac{\ln x}{x} dx$
7. $\int_1^{\sqrt{3}} \frac{\sqrt{\arctan x}}{1 + x^2} dx$
8. $\int_1^{\sqrt{e}} \frac{dx}{x \sqrt{1 - (\ln x)^2}}$
9. $\int_{\ln 2}^{\ln(2/\sqrt{3})} \frac{e^x}{\sqrt{1 - e^{-2x}}} dx$
10. $\int_{e^{-3}}^{e^3} \frac{\sqrt{9 - (\ln x)^2}}{x} dx$