21. $\int \frac{e^{2x}+e^{x}}{e^{4x}}dx$

22. $\int \frac{f'(x)}{f(x)}dx$

23. $\int \frac{1}{ax+b}dx$

24. $\int \frac{3}{1+2x}dx$

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

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

27. $\int 3^x dx$

28. $\int 3^{2x+1}dx$

29. $\int_{-2}^{2} 3x^3 - x\,dx$

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

- **APPLICATION OF THE PRIMITIVE FUNCTION**

1. Find the equation of the curve if

   a) $\frac{dy}{dx} = 4x + 1$ and the curve passes through the point $(0, 3)$

   b) $\frac{dy}{dx} = 1 - x^2$ and the curve passes through the point $(-3, 1)$

   c) $\frac{dy}{dx} = 2x + c$ and the curve has a minimum at the point $(2, -1)$

   d) $\frac{d^2y}{dx^2} = 2$ and the curve has a minimum at the point (2, 5)

- **DIFFERENTIATE AND HENCE INTEGRATE**

1. Find $\frac{d}{dx}(x^2 - 1)^5$ and hence $\int x(x^2 - 1)^4\,dx$

2. Find $\frac{d}{dx}(x^2 - 7)^4$ and hence $\int 5x(x^2 - 7)^3 dx$

3. Find $\frac{d}{dx}(x^3 - 3x)^{10}$ and hence $\int (x^2 - 1)(x^3 - 3x)^9 dx$

4. Find $\frac{d}{dx}\sqrt{3x^2 + 4}$ and hence $\int \frac{x}{\sqrt{3x^2+4}}dx$

5. Find $\frac{d}{dx}(sin^3 x)$ and hence $\int sin^2 x\, cos dx$

6. Find $\frac{d}{dx}(tan^3 x)$ and hence $\int sec^2 x\, tan^2 x\, dx$

7. Find $\frac{d}{dx}(xe^{3x})$ and hence $\int xe^{3x}\,dx$