

Calculus Diagnostic

Find the derivative with respect to x of the following functions:

1. $3x^5 - 4x^2$

2. $5e^{-3x}$

3. Ce^{-kx}

4. $2xe^{6x}$

5. $2\sin(6x)$

6. $A\cos(kx)$

Find the following integrals:

1. $\int 2x^3 dx$

2. $\int_4^5 2x^3 dx$

3. $\int \sin(2x) dx$

4. $\int_b^c \sin(ax) dx$

7. What is the definition of a derivative?

8. What can a derivative tell you about a function?

5. If $f(x) = \frac{dF}{dx}$, then find

$$\int_a^b f(x) dx =$$

6. What does the definite integral of a function tell you about the function?