INTEGRALS

PROPERTIES OF DEFINITE INTEGRALS

EXERCISE

Q.1 What is the difference property of definite integrals?

(a) $\int_a^b [-f(x) - g(x)dx$

(b) $\int_a^b [f(-x) + g(x)dx$

(c) $\int_a^b [f(x) - g(x)dx$

(d) $\int_a^b [\mathrm{f(x)} + \mathrm{g(x)}dx$

Q.2 The sum property of definite integrals is $\int_a^b [\mathrm{f(x)} + \mathrm{g(x)}dx$?

(a) False

(b) True

Q.3 What is the constant multiple property of definite integrals?

(a) $\int_a^b \mathrm{k} \cdot \mathrm{f(x)}dy$

(b) $\int_a^b [\mathrm{f}(-\mathrm{x}) + \mathrm{g(x)}dx$

(c) $\int_a^b \mathrm{k} \cdot \mathrm{f(x)}dx$

(d) $\int_a^b [\mathrm{f(x)} + \mathrm{g(x)}dx$

Q.4 What is the reverse integral property of definite integrals?

(a) $-\int_a^b \mathrm{f(x)}dx = -\int_b^a \mathrm{g(x)}dx$

(b) $-\int_a^b \mathrm{f(x)}dx = -\int_b^a g(\mathrm{x})dx$

(c) $\int_a^b \mathrm{f(x)}dx = \int_b^a \mathrm{g(x)}dx$

(d) $\int_a^b \mathrm{f(x)}dx = -\int_b^a \mathrm{f(x)}dx$

Q.5 Identify the zero-length interval property.

(a) $\int_a^b f(x)dx = -1$ (b) $\int_a^b f(x)dx = 1$

(c) $\int_a^b f(x)dx = 0$ (d) $\int_a^b f(x)dx = 0.1$

Q.6 What is adding intervals property?

(a) $\int_a^c \mathrm{f}(\mathrm{x})dx + \int_b^c \mathrm{f}(\mathrm{x})dx = \int_a^c \mathrm{f}(\mathrm{x})dx$

(b) $\int_a^b \mathrm{f}(\mathrm{x})dx + \int_b^a \mathrm{f}(\mathrm{x})dx = \int_a^c \mathrm{f}(\mathrm{x})dx$

(c) $\int_a^b \mathrm{f}(\mathrm{x})dx + \int_b^c \mathrm{f}(\mathrm{x})dx = \int_a^c \mathrm{f}(\mathrm{x})dx$

(d) $\int_a^b \mathrm{f}(\mathrm{x})dx - \int_b^c \mathrm{f}(\mathrm{x})dx = \int_a^c \mathrm{f}(\mathrm{x})dx$

Q.7 What is the name of the property of $\int_a^b \mathrm{f}(\mathrm{x})\mathrm{dx} + \int_b^c \mathrm{f}(\mathrm{x})\mathrm{dx} = \int_a^c \mathrm{f}(\mathrm{x})\mathrm{dx}$?

(a) Zero interval property (b) Adding intervals property

(c) Adding integral property (d) Adding integrand property

Q.8 What is the name of the property $\int_a^b \mathrm{f}(\mathrm{x})dx = -\int_b^a \mathrm{f}(\mathrm{x})\mathrm{dx}$?

(a) Reverse integral property (b) Adding intervals property

(c) Zero interval property (d) Adding integrand property

Q.9 What is the name of the property $\int_a^b f(x)dx = 0$?

(a) Reverse integral property (b) Adding intervals property

(c) Zero-length interval property (d) Adding integrand property

Q.10 What property this does this equation come under $\int_{-1}^{1} \sin x dx = -\int_{1}^{-1} \sin x dx$?

(a) Reverse integral property (b) Adding intervals property

(c) Zero-length interval property (d) Adding integrand property

Q.11 Evaluate $\int_2^3 3f(x) - g(x)dx$, if $\int_2^3 f(x) = 4$ and $\int_2^3 g(x)dx = 4$.

(a) 38 (b) 12

(c) 8 (d) 7

Q,12 Compute $\int_3^2 f(x)dx$ if $\int_2^3 f(x) = 4$.

(a) – 4 (b) 84

(c) 2 (d) – 8

Q.13 Compute $\int_8^2 2f(x)dx$ if $\int_2^8 f(x) = -3$

(a) – 4 (b) 84

(c) 2 (d) – 8

Q.14 Compute $\int_2^6 7e^x dx$.

(a)30.82 (b)$7\left(e^6 - e^2\right)$

(c)11.23 (d)$81\left(e^6 - e^3\right)$

Q.15 Evaluate $\int_3^7 2f(x) - g(x)dx$, if $\int_3^7 f(x) = 4$ and $\int_3^7 g(x)dx = 2$.

(a) 38 (b) 12

(c) 6 (d) 7

ANSWER KEY

1. (c)

2. (b)

3. (c)

4. (d)

5. (c)

6. (c)

7. (b)

8. (a)

9. (b)

10. (a)

11. (c)

12. (c)

13. (c)

14. (b)

15. (c)