12th cbse

November 25, 2023

Questions

1. If $f(x) = (\frac{1-x}{1+x})$,then find $(f \circ f)(x)$.

2. Let W denote the set of words in the English dictionary. Define the relation R by

   $R = \{(x, y) \in W \times W$such that x and y have at least one letter in common$\}$. Show that this relation R is reflexive and symmetric, but not transitive.

3. Find the inverse of the function $f(x) = \frac{4x}{3x+4}$.

4. $\int x\sqrt{x+2}$ dx is equal to

   (A) $\frac{2}{5}(x+2)^{\frac{5}{2}}$ - $\frac{2}{3}(x+2)^{\frac{3}{2}}$ + C

   (B)$\frac{5}{2}(x+2)^{\frac{5}{2}}$ + $\frac{3}{2}(x+2)^{\frac{3}{2}}$ + C

   (C)$\frac{2}{5}(x+2)^{\frac{5}{2}}$ - $\frac{4}{3}(x+2)^{\frac{3}{2}}$ + C

   (D)$\frac{2}{5}(x+2)^{\frac{5}{2}}$ + $\frac{4}{3}(x+2)^{\frac{3}{2}}$ + C

   where C is the constant of integration.

5. $\int_0^1 tan(sin^{-1}x)$dx equals

   (A) 2

   (B) 0

   (C) -1

   (D) 1

6. $\int \frac{e^x}{x+1}|1+(x+1)log(x+1)|$ dx equals
   (A) $\frac{e^x}{x+1}+c$
   (B) $e^x\frac{e^x}{x+1}+c$
   (C) $e^x log(x+1)+e^x+c$
   (D) $e^x log(x+1)+c$

7. Evaluate:
   $\int_{\frac{\pi}{6}}^{\frac{\pi}{3}} \frac{sinx+cosx}{\sqrt{sin2x}}$ dx

8. Find:
   $\int \frac{x}{(x-1)^2(x+2)}$ dx

9. $\int_0^{\frac{\pi}{2}} (sin^{100}x - cos^{100}x)$ dx equals
   (A) $\frac{\pi}{100}$
   (B) 0
   (C) $\frac{1}{100}$
   (D) $\frac{\lfloor 100}{(100)^{100}}$

10. $\int \frac{cos8x+1}{tan2x-cot2x}$ dx= λ cos8x+c,then the value of λ is
    (A) $\frac{1}{16}$
    (B) $\frac{1}{8}$
    (C) $\frac{-1}{16}$
    (D) $\frac{-1}{8}$