MATHS

BOOKS - JMD MATHS (PUNJABI ENGLISH)

RELATION & FUNCTIONS

Exercise

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1. If $f(x) = x^2$ and $g(x) = \sin x$ then $f \circ g(x)$ is

A. sin^2(x)

B. sin(x^2)

C. (x^2)(sinx)

D. sin(x^3)

Answer: A

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2. If $f(x) = |x|$ and $g(x) = [x]$ then

$f \circ g \left(-\dfrac{1}{2} \right)$ is

A. 0

B. 1

C. -2

D. -1

Answer: B

3. If $f: R-> R$ is defined and $f(x) = \dfrac{3x + 4}{2}$ then f^{-1} is

A. (4x-3)/2

B. (4x-2)/3

C. (2x-4)/3

D. (4x+3)/2

Answer: C

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4. If $f: R \to R$ given by $f(x) = (x^3) + 3, then$ f^-1(x)` equals::

A. 6(x^4)+(x^2)+ 12

B. (x^2)+(6x)+ 12

C. (x^4)+(6x)+ 12

D. (x^4)+(6x^2)+ 12

Answer: D

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5. If $f(x) = (x^2)$, then $f \circ f(x) =$

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6. If $f(x) = 2x - 3$, then $f^{-1}(x)=$

7. The smallest equivalence relation R on set

$A = \{1, 2, 8\}$ is=

8. The range of $\dfrac{|x - 1|}{x - 1}$ is 1

9. If $f(x) = 4x - 5$ then $f^{-1}(x) = \dfrac{x + 5}{4}$

10. If $f(x) = [x], g(x) = |x|$, then find the value of $(f o g)\left(\dfrac{5}{2}\right) - (g o f)\left(-\dfrac{5}{2}\right)$

11. If $f: N-> N$ is defined by

$$\left\{\left[\frac{n+1}{2}(\text{ if } nisodd)\right], \left[\left(\frac{n}{2}\right)(\text{ if } niseven)\right]\right.$$

is f(n) is one one function?

12. Prove that function $f: R \to R, f(x) = \dfrac{3-2x}{7}.$ is one-one and onto. Also find $f^{-1}.$

13. Show that the relation $R = \{(a, b) : a \leq b\}$

is not equivalence relation

14. Let T be the set of all triangles in a plane

with R as a relation in T given by

$R \cong \{(T_1, T_2) : T_1 \cong T_2\}$ Show that R is an

equivalence relation.

15. Let $f: R- > R$ is defined as $f(x) = x^2$ is

neither one one nor onto

16. Let $f: R - \left\{ -\dfrac{3}{5} \right\} - > R$ be a function

defined as $f(x) = \dfrac{2x}{5x + 3}$ find

$f^{-1}: Ran \geq offR > R - \left\{ -\dfrac{3}{5} \right\}$

17. If $R = \{(x, y) : x + 2y = 8\}$ is a relation on

N write the range of R

18. If $f : R \to R$ be given by: $f(x) = (3 - x^3)^1 / 3$, then f(f(x)) is:

19. Let $A = R - \{3\}$ and $B = R - \{1\}$.

Consider the function $f : A- > B.$ defined by

$f(x) = \dfrac{x - 2}{x - 3}$ Is f one one or Onto? Justify

your answer

20. Show that the relation R defined by

$R = \{(a, b)(a - b)$, is divisible by 5, `a, b in N\}$

is an equivalence relation.

21. If $f(x) = \dfrac{4x + 3}{6x - 4}$, $x \neq \dfrac{2}{3}$ show that

$f \circ f(x) = x$ for all $x \neq \dfrac{2}{3}$. what is inverse of

f?

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