Question 1

1 Mark

A. If a=36 and b=4, Classify the following numbers to rational or irrational.

$$\sqrt{a+b}\ ,\ \sqrt{ab}\ ,\ \sqrt{a-b}\ ,\ \sqrt{\frac{a}{b}}$$

Answer:

8 Marks

B. Solve the following inequalities and write the solution in interval notation.

1. $x-10<2x-2<x$
2. $-2x^2-5x+12\geq 0$
3. $5-6\,|\,x+7\,|\leq 17$
3. $\frac{x+3}{4}\geq\frac{x-2}{3}+\frac{1}{4}$

Answer:

Question 2

6 Marks

A: Find the domain of the following functions.

1. $f(x) = \sqrt{4 + 3x - x^2}$
2. $g(x) = \dfrac{2x - 3}{|x - 1| - 4}$
3. $h(x) = \dfrac{\sqrt{-x}}{(x - 3)(x + 5)}$

Answer:

Question 3

2 Marks

A: Determine whether the two functions are the same or not.

$$f(x)=\frac{x^2-4}{x-2} \text{ and } g(x)=x+2$$

B: In which domain the two functions be same function.

Answer:

Question 4

6 Marks

1. Find $f(x)+f(\frac{1}{x})$ if $f(x)=x^3-\frac{1}{x^3}$, $x\neq 0$.

2. Let $f(x)=x^2+1$ and $g(x)=3x+2$ find $\left(\frac{g}{f}\right)$, (fg) and their domains.

Answer:

Question 5

2 Marks

Determine whether the function $f(x) = \frac{5x - 7}{4}$ is a one-to-one or not. If yes then find f^{-1}.

Question 6

3 Marks

Without using calculator find the values of:

1. $\cos(-240^{o})$
2. $\cos(\cos^{-1}(0.6))$
3. $\cot(\sin^{-1}(-\frac{1}{3}))$

Question 7

2 Marks

1. Prove the identity $\frac{\sin x - \cos x}{\cos^2 x} = \frac{\tan^2 x - 1}{\sin x + \cos x}$, $x \in (0, \frac{\pi}{2})$.
2. Solve the trigonometric equation $\sin\theta + \sin 3\theta + \sin 5\theta = 0$.