

KING FAHD UNIVERSITY OF PETROLUUM AND MINERALS

Math 001 Term 041

Supplementary questions

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Part One:

Q1: a. If the Line $3y + kx - 1 = 0$ is perpendicular to the Line $3x + (k - 4)y + 5 = 0$

Find the value of k

b. If $f(x) = x^2 + 2$ and $g(x) = 3x - 1$ then $\frac{f}{g}(-1) =$

Q2: a. Let $f(x) = \sqrt{9 - x^2}$ and $g(x) = \frac{1}{x^2 - x - 2}$, find domain of $\frac{g}{f}(x)$

b. If $f(x) = \frac{4 - x}{x}$ and $g(x) = \frac{4}{x + 1}$, then $(g \circ f)(k - 1) =$

Q3: Find y-intercept(s) of the equation $x = |y - 2|$

Q4: If $\left(\frac{7}{4}, \frac{11}{4}\right)$ is the midpoint of the line segment with end points (x, y) and $\left(-\frac{1}{2}, \frac{5}{3}\right)$, then find the value of x .

Q5: If the x-intercept of the graph of the function $f(x) = 3x^2 + kx - 4$ is 4, then find the second x-intercept.

Q6: If the line $\frac{1}{2}kx + 3y - 7 = 0$ is perpendicular to the line passing through $(1, -0.5)$ and $(-2, -5)$, find the value of k .

Q7: Find the x-intercept of the line passing through the points $(-2, 1)$ and $(3, -5)$

Q8: Two positive integers x, y satisfy the equation $2x + y = 40$. If their product is maximum, find $2y - 3x$

Q9: if the point $\left(\frac{-1}{4}, t\right)$ is the vertex of the parabola $f(x) = x^2 + mx + 2$ for some real number m . Find the value of t .

Q10: If $f(x) = \frac{1}{x - 2}$ and $g(x) = \sqrt{16 - x^2}$, then find Domain of

a. $\left(\frac{f}{g}\right)(x)$

b. $\left(\frac{g}{f}\right)(x)$

c. $(g \circ f)(x)$

Q11: If $f(x) = 2x - 1$ and $g(x) = \frac{1}{x}$, find $(f \circ g)(k - 1)$.

Q12: if $f(x) = 5x^2 - 4x$, find the expression $\frac{f(x + h) - f(x)}{h}$.

Q13: Find the Difference Quotient of the function $f(x) = \sqrt{x}$

Q14: If $f(x) = \frac{x}{x-2}$ and $g(x) = \sqrt{x-1}$, then find $(g \circ f)(k+2)$

Q15: Find the inverse of the function $f(x) = \frac{x-1}{x+1}$, $x \neq -1$

Q16: If the Domain of $f(x)$ is $(-\infty, 3]$, then find the domain of $g(x) = -3f(x-2) + 3$

Q17: If the center of the circle $x^2 + y^2 - 2ax + 4y - 11 = 0$ is $(1, -2)$ and its radius is r , then $4a - r$.

Q18: Find the maximum of the parabola $f(x) = -2x^2 + 12x + 2$

Q19: Find the Difference Quotient of $f(x) = 2x^2 + 5x - 3$

Q20: If the parabola $f(x) = a(x-h)^2 + k$ has maximum at $(h, 2)$ and has x-intercepts at $x=1$ and $x=9$ then $8a - h + 3k =$

Q21: The graph of the function $f(x) = \frac{2x-1}{1+2x}$ is translated **one unit** leftward and translated **two units** upward, Find the equation of the new graph.

Q22: The graph of the function $f(x) = \frac{2x}{1-2x}$ is translated **three units** leftward and translated **one units** upward, Find the equation of the new graph.

Q23: The graph of the function $f(x) = 3x^2 - 2x + 1$ is translated **three units** leftward and translated **two units** upward, Find the equation of the new graph