

KING FAHD UNIVERSITY OF PETROLUUM AND MINERALS
Prep Year Math Program
Math 001 Term 032

Name:

ID#:

Section:

[Provide neat and complete solution. Show all necessary steps for full credit.]

Solve then Fill in the blank

(2 points for each part)

1. If the point (a,b) lies in Quadrant II, then the point $(ab,-2a)$ lies in Quadrant _____.
2. If a line segment AB has the midpoint $M(9,3)$ and one endpoint $A(5,1)$, then the other endpoint is _____.
3. The **radius** of the circle $9x^2 + 9y^2 = 6y - 17$ is equal to _____.
4. The equation of the circle in the **standard form** that has its center at $(-2,3)$ and is tangent to the y -axis is _____.
5. The y -intercept(s) of the equation $x = |y - 2|$ is (are) _____.

6. Which **one** of the following defines y as a function of x _____.

- a) $\{(2,5),(-9,8),(-4,3),(2,0)\}$ b) $y^2 + x^2 = 1$ c) $|x| + |y| = 4$ d) $y = 1$

7. If $f(x) = \begin{cases} |1 - x^2| & \text{if } x \geq 1 \\ [x - 1.5] & \text{if } x < 1 \end{cases}$, then $(f \circ f)(\sqrt{2}) =$ _____.

8. The **domain** of the function $f(x) = \frac{\sqrt{x^2 - x}}{x^2 - 4}$ is equal to _____.

9. The equation of the line passing through the points $(-2,-1)$ and $(-2,4)$ is _____.

10. If the two lines $3x - 5y + 1 = 0$ and $ky - 2x + 4 = 0$ are **perpendicular**, then the value of k is _____.

11. The **vertex** of the function $f(x) = -x^2 + 2x + 3$ is _____.

12. If x is a real number, then the **maximum area** of a rectangle of length $3 + 2x$ and width $1 - 2x$ is equal to _____.

13. The graph of the equation $|x| + |y - 1| = 8y^2$ is **symmetric** with respect to the _____.

14. If the graph of $y = 2x^2 - 2$ is shifted horizontally one unit left and vertically two units up, then the equation of the new graph is _____.

15. If $f(x) = \sqrt[3]{1-x^3}$, then $(f \circ f)(-x) =$ _____.

16. If the point $(-1, 2)$ lies on the graph of $y = f(x)$ then the image of this point on the graph of $y = -f(x-2) + 1$ is _____.

17. The range of the function $f(x) = \begin{cases} x & \text{if } x < 1 \\ 2 & \text{if } x \geq 1 \end{cases}$ is _____.

18. If $f(x) = |x+1| - 2$, then the interval on which $f(x)$ is increasing is _____.

19. If $f(x) = \frac{1}{x}$ and $h > 0$, then the expression $\frac{f(1+h) - f(1)}{h}$ in the **simplest form** is equal to _____.

20. If the graph of a **linear function** f has the intercepts $(-k, 0)$ and $(0, k)$ where $k \neq 0$ and $f(-3) = 10$, then $k =$ _____.