

Please follow directions and put your answers in the space provided: GOOD LUCK!!!

- Given the points (2,-1) and (3,4), find the distance between the points and the midpoint of the line segment joined by the points.
Distance _____ Midpoint _____

- Given $f(x) = 2|x| + 3x$, find $f(-2) =$ _____ and $f(-x) =$ _____.

- Find the equation of the line that goes through the point (2,-4) and is perpendicular to the line $2x - 3y = 6$. Then graph both lines.
Equation: _____ Graph: _____

- Graph the following piecewise defined function: $f(x) = -\frac{1}{3}x + 2$ when $x \leq 0$
 $f(x) = x - 5$ when $x > 0$

5. Given $f(x) = \frac{2}{3}x - \frac{4}{5}$ and $g(x) = \frac{3}{2}x + \frac{6}{5}$, find the following:
a. $f \circ g(x) =$ _____ b. $g \circ f(x) =$ _____

6. Given $f(x) = 5x^2 + 4x$, construct and simplify the difference quotient:
Answer _____

7. Determine whether the following functions are even, odd or neither:
a. $f(x) = x^2 + 4$ b. $g(x) = x^3 - 3x + 1$

8. A kayak moves at a rate of 12 mph in still water. If the river's current flows at a rate of 4 mph, how long does it take the boat to travel 36 miles upstream?
Answer: _____

9. Solve the following equations and inequalities:
a. $x^4 - 3x^2 + 2 = 0$ $x =$ _____

b. $\frac{x}{x-4} - \frac{4}{x+4} = \frac{32}{x^2-16}$ $x =$ _____

c. $\sqrt{3x-5} + \sqrt{2x+3} + 1 = 0$ $x =$ _____

d. $|2x-11|-5 = -3$ $x =$ _____

e. $\frac{2}{3} \leq -\frac{4}{5}(x-3) \leq 1$ Interval Notation: _____

f. $|x + \frac{3}{4}| < \frac{1}{4}$ Interval Notation: _____

10. Given $f(x) = -2x^2 + 12x - 14$, Find the Vertex, x intercepts and y intercept, then graph the function.

Vertex _____ x-intercepts _____ y-intercept _____

Graph:

11. Given $f(x) = x^3 - 4x^2 + 2x + 4$, find the roots of the function and the multiplicity of each, find the y-intercept of the function and graph the function:

Roots and multiplicity: _____

y-intercept: _____

Graph:

12. The distance a car travels varies directly as the time the car travels. If a car travels 90 miles in 1.5 hours, how far can the car travel in 2 hours?