Quiz 2 - Form B

Show all work and clearly box or circle your final answer. Use the back for more room, but make sure you copy down the numbers correctly! Do not forget your name.

1. If $g(x) = 7f(x + 14) - 20$. Then how is $f(x)$ shifted to obtain the graph $g(x)$? (1 point)

The graph is moved $\boxed{\text{to the left by 14, down by 20, and vertical stretch by 7}}$.

2. Find the difference quotient of $f(x) = 4x^2 - 3x$. (2 points)
The difference quotient formula is

$$\frac{f(x + h) - f(x)}{h}$$

$$\frac{4(x + h)^2 - 3(x + h) - (4x^2 - 3x)}{h}$$
$$= \frac{4(x^2 + 2xh + h^2) - 3x - 3h - 4x^2 + 3x}{h}$$
$$= \frac{4x^2 + 8xh + 4h^2 - 3x - 3h - 4x^2 + 3x}{h}$$
$$= \frac{8xh + 4h^2 - 3h}{h}$$
$$= \frac{h(8x + 4h - 3)}{h}$$
$$= \boxed{8x + 4h - 3}$$

Note: When we plug in 0 to this final answer, we get what, in Calculus, is called the derivative.

3. Determine if the function $f(x) = 4x^2 - 3x$ is even, odd, or neither. A correct guess is not sufficient. You must show your work to get points: (2 points)

I first test even: $f(-x) = 4(-x)^2 - 3(-x) = 4x^2 + 3x$. This is not my original function, so my function is not even. Now I test odd: $-f(x) = -4x^2 + 3x$. This is not equal to $f(-x)$ calculated above, so my function is not odd. Thus the answer is $\boxed{\text{neither}}$.