

**Attach all your work to the back of this page.**

Find the **EXACT** rates of change for the given function on given interval.

1.  $f(x) = 3x + 5$  on  $[1, 7]$  1. \_\_\_\_\_

2.  $g(x) = x^2 - 2x + 4$  on  $[0, 4]$  2. \_\_\_\_\_

3.  $h(x) = x^3 - 2x^2 + 3x - 5$  on  $[-2, 3]$  3. \_\_\_\_\_

4.  $f(x) = \sqrt{4x - 7}$  on  $[2, 8]$  4. \_\_\_\_\_

5.  $g(x) = \frac{3x+1}{x^2+1}$  on  $[1, 3]$  5. \_\_\_\_\_

Find the difference quotient for the following functions. You must simplify until the ***h*** is no longer in the denominator.

6.  $f(x) = 3x + 5$  6. \_\_\_\_\_

7.  $f(x) = x^2 - 2x + 4$  7. \_\_\_\_\_

8.  $f(x) = \frac{3}{x}$  8. \_\_\_\_\_

9.  $f(x) = x^3$  9. \_\_\_\_\_

10.  $f(x) = \sqrt{x - 4}$  10. \_\_\_\_\_