

## Unit 4 Test Review

Simplify.

1.  $(12x^2 + 13x - 11) + (14x^2 - x - 13)$

2.  $(15u^3 + 18u) - (21u + 32u^2 - 26u^3)$

3.  $(11x^3 - 5x^2) - (11 - 12x^3) + (-10 + 5x^3)$

4.  $2x^4(13x^2 + 11x - 15)$

5.  $-7y(4y^3 - 9y^2 + 8y)$

6.  $(x + 12)(x - 7)$

7.  $(12r - 9)^2$

8.  $(9z + 5)(2z - 7)$

Simplify and state the domain.

9.  $\frac{(5x+4)(x-12)}{5x+4}$  Domain:

10.  $\frac{4x+1}{(4x+1)(x-6)}$  Domain:

**Perform the indicated operations for the given functions.**

$$f(x) = -6x + 9, \quad g(x) = (x - 7)(x + 6)$$

11.  $h(x) = 3f(x) - g(x)$

12.  $h(x) = f(x) \times f(x)$

13.  $h(x) = f(x) \times g(x)$

14.  $h(x) = \frac{f(x)}{g(x)}$  **State the domain.**

**Find the value of each expression, given the following equations. Show your work!**

$$f(x) = 4x + 3, \quad g(x) = 3x^2 + x - 7$$

15.  $2f(1) \cdot g(3)$

16.  $f(-2) + g(-1)$

**Simplify the following:**

17.  $\sqrt{-81}$

18.  $-\sqrt{3} \cdot \sqrt{-20}$

19.  $-3\sqrt{-45}$

20.  $\sqrt{-120}$

21.  $-12i \cdot 11i$

22.  $5 + 2i + 3 + 7i$

23.  $6 - 4i - -4 + i$

24.  $3i \cdot 12 - 8i$

25.  $(4 - 7i)(-3 + 9i)$

26.  $(-7 - 2i)^2$