Name \_\_\_\_\_ Mr. Schlansky Date \_\_\_\_\_ Algebra 2

## **Operations with Polynomials**

1. Express  $(x^2 - 5x - 2) + (-6x^2 - 7x - 3)$  in simplest terms.



2. Express  $(3x^2 - 8x + 1) + (2x^2 - 3x + 5)$  in simplest terms.

3. Express  $(-2x^2 + 5x - 7) - (7x^2 - 3x + 2)$  in simplest terms.

4. Express  $(7x^2 + 2x + 1) - (2x^2 - 3x - 5)$  in simplest terms.

5. What is the result when  $5m^2 + 3m - 1$  is subtracted from  $7m^2 - 5m + 1$ ?

6. What is the result when 7xy + 5y - 2x is subtracted from 9xy - 5y + 3x?

## Express the following in simplest terms

7. 
$$\frac{12x^3 - 6x^2 + 2x}{2x}$$
8. 
$$\frac{8x^5 - 2x^4 + 4x^3 - 6x^2}{2x^2}$$

9. 
$$-3x(x-4) - 2x(x+3)$$
 10.  $-3x^2y(5xy^2 + xy)$ 

11. 
$$(x-4)(x+6)$$
 12.  $(2x-3)(3x+1)$ 

13. 
$$(x^2 + 2x - 4)(x + 3)$$
 14.  $(2x^2 + 3x - 2)(x - 2)$ 

15. 
$$(3x^2 + x - 5)(x - 4)$$
  
16.  $(2y^2 - 3y - 1)(y + 7)$ 

17. 
$$(4x^2 + 2x + 3)(x - 2)$$
  
18.  $(-5x^2 - 4x + 1)(2x + 5)$ 

19. 
$$(m+7)^2$$
 20.  $(y-4)^2$ 

21. 
$$(x-9)^2$$
 22.  $(z+2)^2$ 

23. 
$$(2x-3)^2$$
 24.  $(4x+2)^2$ 

25. Mr. Schlansky's tutoring revenue can be represented by  $r(x) = 25x^2 - 90x + 14$  and his costs can be represented by  $c(x) = 12x^2 + 21x + 10$ . If his profit can be determined using p(x) = r(x) - c(x), write a polynomial function what would represent p(x).

26. Stone Manufacturing has developed a cost model,  $C(x) = 0.18x^3 + 0.02x^2 + 4x + 180$ , where x is the number of sprockets sold, in thousands. The sales price can be modeled by S(x) = 95.4 - 6x and the company's revenue by  $R(x) = x \bullet S(x)$ . Express the company's profits, R(x) - C(x).

27. A manufacturing company has developed a cost model,  $C(x) = 0.15x^3 + 0.01x^2 + 2x + 120$ , where x is the number of items sold, in thousands. The sales price can be modeled by S(x) = 30 - 0.01x. Therefore, revenue is modeled by  $R(x) = x \bullet S(x)$ . Express the company's profit, P(x) = R(x) - C(x).