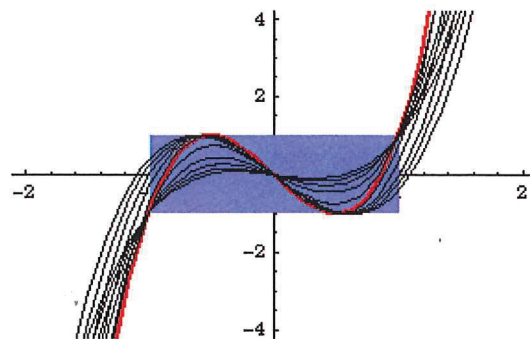


6.2B Polynomial Addition and Subtraction

"Polynomials are temperamental creatures. If you force them to behave somewhere, they will go wild in other places."

-- Oved Shisha (1932-1998)



1. Jamal, Precious and Kiarra were working on the following problems during class. Did they do the problems correctly? If not, explain what they did wrong and fix their mistakes.

Jamal	Precious	Kiarra
<p><u>Incorrect</u></p> $\begin{array}{r} 7x^3 - 3x^2 + 5 \\ + 2x^3 - 5x - 7 \\ \hline 9x^3 - 8x^2 - 2 \end{array}$ <p>These are not like terms.</p> <p>$9x^3 - 3x^2 - 5x - 2$</p>	<p><u>Incorrect</u></p> $\begin{array}{r} -3x^3 + 5x^2 + 4 \\ - (-8x^3 - 4x + 9) \\ \hline 5x^6 + 9x^3 - 5 \end{array}$ <p>These are not like terms; 2nd error on adding like terms, the exponent does not change from 3 to 6!</p> <p>$5x^3 + 5x^2 + 4x - 5$</p>	<p><u>Incorrect</u></p> $\begin{array}{r} (4x^2 - 9x) - (-8x^2 + 3x - 7) \\ = (4x^2 + 8x^2) + (-9x + 3x) - 7 \\ = 12x^2 - 6x - 7 \end{array}$ <p>2 sign errors when distributing</p> <p>$(4x^2 + 8x^2) + (-9x - 3x) + 7$</p> <p>$12x^2 - 12x + 7$</p>

#2 – 15: Find each sum or difference.

2. $(4x - 5) + (3x + 6)$

$7x + 1$

3. $(3p^2 - 2p + 3) - (p^2 - 7p + 7)$

$2p^2 + 5p - 4$

4. $(7x^2 - 8) + (3x^2 + 1)$

$10x^2 - 7$

5. $(x^2 + y^2) - (-x^2 + y^2)$

$2x^2$

6. $\begin{array}{r} 5a^2 + 3a^2x - 7a^3 \\ (+) 2a^2 - 8a^2x + 4a^3 \\ \hline \end{array}$

$7a^2 - 5a^2x - 3a^3$

7. $\begin{array}{r} 5x^2 - x - 4 \\ (-) (3x^2 + 8x - 7) \\ \hline \end{array}$

$2x^2 - 9x + 3$

6.2B Polynomial Addition and Subtraction

#2 – 15 (continued): Find each sum or difference.

$$\begin{array}{r}
 2x + 6y - 3x + 5 \\
 8. \quad 4x - 8y + 6x - 1 \\
 (+) \quad x - 3y \quad + 6 \\
 \hline
 \end{array}
 \begin{array}{r}
 -x + 6y + 5 \\
 10x - 8y - 1 \\
 x - 3y + 6 \\
 \hline
 10x - 5y + 10
 \end{array}$$

$$\begin{array}{r}
 11m^2n^2 + 2mn - 11 \\
 9. \quad (-)(5m^2n^2 - 6mn + 17) \\
 \hline
 6m^2n^2 + 8mn - 28
 \end{array}$$

$$\begin{array}{r}
 10. \quad (5x^2 - x - 7) + (2x^2 + 3x + 4) \\
 \hline
 7x^2 + 2x - 3
 \end{array}$$

$$\begin{array}{r}
 11. \quad (5a + 9b) - (4a + 2b) \\
 \hline
 a + 7b
 \end{array}$$

$$\begin{array}{r}
 12. \quad (5x + 3z) + 9z \\
 \hline
 5x + 12z
 \end{array}$$

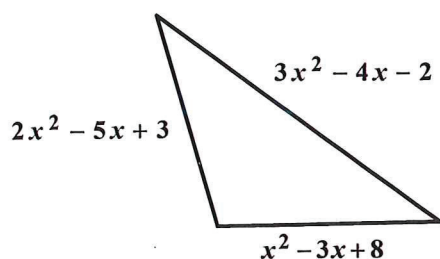
$$\begin{array}{r}
 13. \quad 6p - (8q + 5p) \\
 \hline
 p - 8q
 \end{array}$$

$$\begin{array}{r}
 14. \quad (5a^2x + 3ax^2 - 5x) + (2a^2x - 5ax^2 + 7x) \\
 \hline
 7a^2x - 2ax^2 + 2x
 \end{array}$$

$$\begin{array}{r}
 15. \quad (x^3 - 3x^2y + 4xy^2 + y^3) - (7x^3 - 9x^2y + xy^2 + y^3) \\
 \hline
 -6x^3 + 6x^2y + 3xy^2
 \end{array}$$

16. Find the perimeter of the triangle.

$$\begin{array}{r}
 P = 6x^2 - 12x + 9
 \end{array}$$



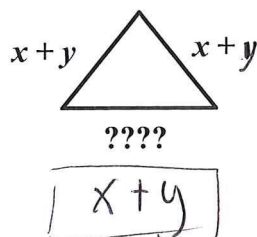
17. Find the difference between 5 more than the square of a number and 8 less than twice the number.

$$\begin{array}{r}
 (x^2 + 5) - (2x - 8) \\
 x^2 + 5 - 2x + 8 \\
 \hline
 x^2 - 2x + 13
 \end{array}$$

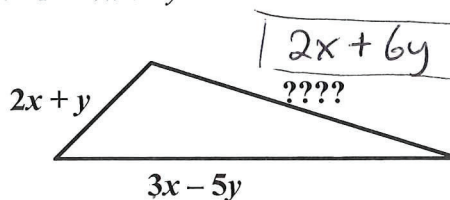
6.2B Polynomial Addition and Subtraction

#18 – 19: Find the measure of the third side of each triangle. P is the measure of the perimeter.

18. $P = 3x + 3y$



19. $P = 7x + 2y$



20. Rectangular prism A has a volume of $x^3 + 2x^2 - 3$. Rectangular prism B has a volume of $x^4 + 2x^3 - 8x^2$. What is the difference when comparing the volume of rectangular prism B and the rectangular prism A ?

$$(x^4 + 2x^3 - 8x^2) - (x^3 + 2x^2 - 3) =$$

$$\boxed{x^4 + x^3 - 10x^2 + 3}$$

21. Suppose that two cars are having a race. The distance traveled by one car after t seconds is $10t^2 + 50t$ meters, while the distance traveled by the other car after t seconds is $15t^2 + 40t$ meters. How far would the two cars be apart after t seconds?

$$(15t^2 + 40t) - (10t^2 + 50t) = \boxed{5t^2 - 10t \text{ meters}}$$

22. At Anoka High School, the number of student tickets sold for a home football game can be modeled by $S(p) = 64p + 8450$ where p is the winning percent of the home team. The number of adult tickets sold for these home games is given by $A(p) = 0.5p^2 + 14p + 4200$. Write a function model representing the total number of tickets sold.

$$T(p) = S(p) + A(p)$$

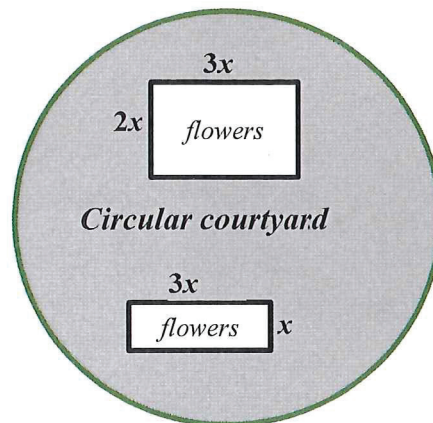
$$= (64p + 8450) + (0.5p^2 + 14p + 4200)$$

$$\boxed{T(p) = 0.5p^2 + 78p + 12650}$$

6.2B Polynomial Addition and Subtraction

23. Andover High School is considering building a circular courtyard with 2 flower beds. The courtyard has an area of $10 - 2x^2$. Write and simplify an expression that represents the green lawn area.

$$\begin{aligned} (10 - 2x^2) - 6x^2 - 3x^2 &= \\ \underline{-11x^2 + 10} \end{aligned}$$



24. While Jamal loves the wild rabbits in his back yard, he would like to keep the little critters out of his vegetable garden. If his vegetable garden is a rectangle whose width is represented by $5x^2 + 3x$ and whose length is represented by $2x^2 + 4$, how much fencing is needed to enclose the veggie garden?

$$\begin{aligned} P &= 2(5x^2 + 3x) + 2(2x^2 + 4) \\ &= 10x^2 + 6x + 4x^2 + 8 \\ &= \underline{14x^2 + 6x + 8} \end{aligned}$$

25. Find the missing term in each problem.

a) $(4x + \underline{2}) + (2x + 3) = 6x + 5$

b) $(x^2 + 4x + 8) - (3x^2 + \underline{5x} + 6) = -2x^2 - x + 2$

c) $(4x + \underline{8}) - (2x + 3) = 2x + 5$

d) $(x^2 + 6x + 7) + (3x^2 + \underline{7x} + 1) = 4x^2 + 13x + 8$

e) $(4x + \underline{-1}) + (2x + 3) - (x - 1) = 5x + 3$

Section 6.2B