

Snow Packets 6 – 10

for

Algebra 1 and Support

(Instructions and Practice Included)

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Reteaching

9.1 Adding and Subtracting Polynomials

◆ Skill A Adding polynomials

Recall To add two polynomials, add the coefficients of like terms.

◆ Example 1

Add the polynomials horizontally.

$$3a^3 + 2a^2 + a + 5 \text{ and } 2a^3 + 4a - 6$$

◆ Solution

Group like terms.

$$\begin{aligned} &(3a^3 + 2a^2 + a + 5) + (2a^3 + 4a - 6) \\ &= (3a^3 + 2a^3) + 2a^2 + (a + 4a) + (5 - 6) \\ &= 5a^3 + 2a^2 + 5a - 1 \end{aligned}$$

The sum of $3a^3 + 2a^2 + a + 5$ and $2a^3 + 4a - 6$ is $5a^3 + 2a^2 + 5a - 1$.

◆ Example 2

Add the same two polynomials vertically.

◆ Solution

Line up the variables. Use zero for the coefficient of any missing variable.

$$\begin{array}{r} 3a^3 + 2a^2 + 1a + 5 \\ + 2a^3 + 0a^2 + 4a - 6 \\ \hline 5a^3 + 2a^2 + 5a - 1 \end{array}$$

The sum of $3a^3 + 2a^2 + a + 5$ and $2a^3 + 4a - 6$ is $5a^3 + 2a^2 + 5a - 1$.

Find each sum.

1. $(5b^2 + 3b) + (b^2 - 2b)$ _____
2. $(8c^2 - 2c) + (2c^2 + 3c)$ _____
3. $(b^3 + 2b^2 + 3b) + (4b^3 - 5b^2 + 4b)$ _____
4. $(3y^3 + 3y - 1) + (2y^3 + 5y^2 + 3y)$ _____
5. $(5r^2 + 3r + 6) + (2r^3 + r^2 + 4r)$ _____
6. $(4m^3 - 5m^2 - m) + (3m^3 - 3m - 5)$ _____
7. $(2x^2 + 3x + 4) + (-5x^2 + x - 7)$ _____
8. $(x^2 - x + 6) + (3x^2 - x + 3)$ _____
9. $(2x^2 + 3x + 6) + (-2x^2 - 7)$ _____
10. $(4x^3 - 5x + 4) + (3x^3 + 5x - 3)$ _____

◆ Skill B Finding the opposite of a polynomial**Recall** To find the opposite of a term, change the sign in front of the term.**◆ Example**Find the opposite of $2b^2 + 3b - 7$.**◆ Solution**The opposite of $2b^2 + 3b - 7$ is $-(2b^2 + 3b - 7)$. $-(2b^2) = 2b^2$; $-(3b) = -3b$; $-(-7) = 7$ Thus, $-(2b^2 + 3b - 7) = -2b^2 - 3b + 7$.**Find the opposite of each polynomial.**

11. $3c^2 + c + 5$ _____

12. $n^2 - 2n + 3$ _____

13. $-2z^2 - z - 1$ _____

14. $5r^2 + 4r - 9$ _____

15. $4t^2 - t$ _____

16. $-9q^2 - q - 3$ _____

17. $5 - 2a - 3a^2$ _____

18. $5e^3 - 4e^2 + 2e$ _____

◆ Skill C Subtracting polynomials**Recall** To subtract a polynomial, add its opposite.**◆ Example**Subtract $2c^2 - 3c - 5$ from $5c^2 - 2c + 3$.**◆ Solution**

$$(5c^2 - 2c + 3) - (2c^2 - 3c - 5) = (5c^2 - 2c + 3) + (-2c^2 + 3c + 5)$$

$$= 3c^2 + c + 8$$

 $2c^2 - 3c - 5$ subtracted from $5c^2 - 2c + 3$ is $3c^2 + c + 8$.**Find each difference.**

19. $(x^2 + 3x + 2) - (3x^2 + x - 6)$ _____

20. $(2x^2 - 5x + 1) - (2x^2 + 3x - 2)$ _____

21. $(3x^2 + x - 4) - (-3x^2 + 2x - 7)$ _____

22. $(-x^2 - x - 4) - (-2x^2 - 4x + 3)$ _____

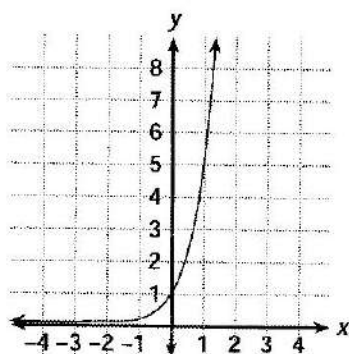
Simplify. Express all answers in standard form.

23. $(2x^2 + 3x - 4) - (2x - 5) + (x^2 - x + 1)$ _____

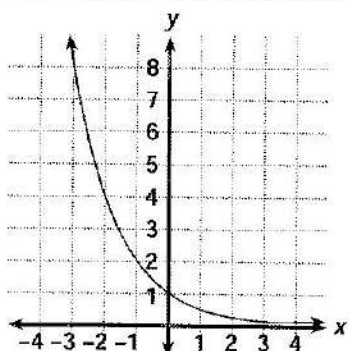
24. $(-5x^2 - 2x + 1) - (3x^2 + 4x - 2) - (-8x^2 - 5x - 3)$ _____

ANSWERS

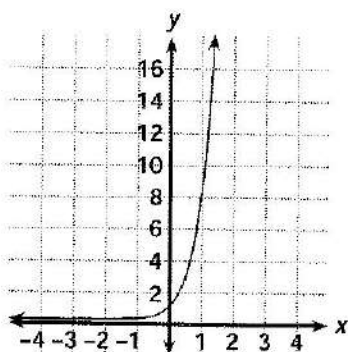
6. The function increases as x increases.



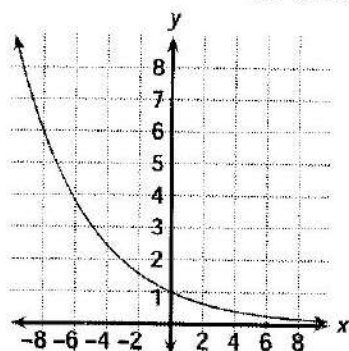
7. The function decreases as x increases.



8. The function increases as x increases.



9. The function decreases as x increases.



Lesson 8.7

- $P = 24(1 - 0.06)^5$, where P represents present value
- $P = 500,000(1 + 0.02)^{-6}$, where P represents present population
- $P = 54(1 + 0.04)^7$, where P represents present value
- \$9030.56
- about 29,364 people
- 6480 people

Reteaching—Chapter 9

Lesson 9.1

- $6b^2 + b$
- $10c^2 + c$
- $5b^2 - 3b^2$
- $5y^3 + 5y^2 + 6y - 1$
- $2r^3 + 6r^2 + 7r + 6$
- $7m^3 - 5m^2 - 4m - 5$
- $-3x^2 + 4x - 3$
- $4x^2 - 2x + 9$
- $3x - 1$
- $7x^3 + 1$
- $-3c^2 - c - 5$
- $-n^2 + 2n - 3$
- $2z^2 + z + 1$
- $-5r^2 - 4r + 9$
- $-4t^2 + t$
- $9q^2 + q + 3$

ANSWERS

17. $-5 + 2a + 3a^2$

18. $-5e^3 + 4e^2 - 2e$

19. $-2x^2 + 2x + 8$

20. $-8x + 3$

21. $6x^2 - x + 3$

22. $x^2 + 3x - 7$

23. $3x^2 + 2$

24. $-x + 6$

Lesson 9.2

1. $2x + 6$

2. $6x - 6$

3. $x^2 - 3x$

4. $-x^2 + x$

5. $2x^2 + 4x$

6. $3x^2 - 3x$

7. $2x^2 - 4x$

8. $6x^2 + 4x$

9. $x^2 + 3x + 2$

10. $x^2 + x - 2$

11. $x^2 - x - 2$

12. $x^2 - 3x + 2$

13. $x^2 + 6x + 9$

14. $x^2 - 6x + 9$

15. $x^2 - 9$

16. $x^2 - 9$

17. $2x^2 + 5x + 3$

18. $2x^2 - 5x + 2$

19. $3x^2 - 4x - 4$

20. $6x^2 - x - 2$

Lesson 9.3

1. $4x + 20$

2. $5x - 10$

3. $2x^2 - 2x$

4. $6x^2 + 2x$

5. $-5x^2 + 30x$

6. $3x^2 + 9x$

7. $x^2 + 5x + 4$

8. $x^2 + 5x + 6$

9. $x^2 + 2x - 15$

10. $2x^2 + 7x + 6$

11. $3x^2 - 18x + 15$

12. $12x^2 - 25x + 12$

13. $x^2 + 7x + 10$

14. $x^2 - x - 12$

15. $x^2 - 8x + 15$

16. $2x^2 + 3x - 9$

17. $4x^2 - 20x + 25$

18. $25x^2 - 40x + 16$

19. $4x^2 - 3x - 1$

20. $2x^2 - 7x + 6$

21. $-6x^2 + 17x - 12$



Reteaching

9.3 Multiplying Binomials

◆ Skill A Multiplying monomials and binomials

Recall The Distributive Property can be used to find the product of a monomial and a binomial.

◆ Example

Use the Distributive Property to find the product $x(x - 4)$.

◆ Solution

$$\begin{aligned} x(x - 4) &= x(x) - x(4) \\ &= x^2 - 4x \end{aligned}$$

The product $x(x - 4)$ is $x^2 - 4x$.

Use the Distributive Property to find each product.

1. $4(x + 5)$ _____ 2. $5(x - 2)$ _____

3. $x(2x - 2)$ _____ 4. $2x(3x + 1)$ _____

5. $-5x(x - 6)$ _____ 6. $-3x(-x - 3)$ _____

◆ Skill B Multiplying two binomials

Recall The Distributive Property can also be used to multiply two binomials.

◆ Example

Use the Distributive Property to find the product $(x + 2)(x + 5)$.

◆ Solution

$$\begin{aligned} (x + 2)(x + 5) &= (x + 2)(x) + (x + 2)(5) \\ &= x(x) + 2(x) + (x)(5) + (2)(5) \\ &= x^2 + 2x + 5x + 10 \\ &= x^2 + 7x + 10 \end{aligned}$$

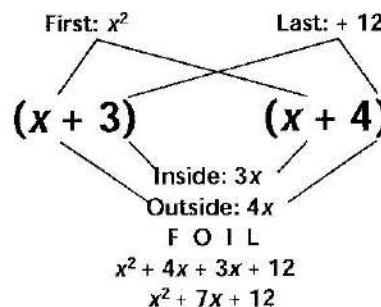
Use the Distributive Property to find each product.

7. $(x + 1)(x + 4)$ _____ 8. $(x + 3)(x + 2)$ _____ 9. $(x + 5)(x - 3)$ _____

10. $(2x + 3)(x + 2)$ _____ 11. $(x - 5)(3x - 3)$ _____ 12. $(3x - 4)(4x - 3)$ _____

◆ **Skill C** Using the FOIL method to multiply two binomials

Recall To multiply two binomials,
multiply the **F**irst terms;
multiply the **O**utside terms;
multiply the **I**nside terms;
add the outside and inside products; and
multiply the **L**ast terms.



◆ **Example 1**

Use the FOIL method to find the product $(x + 3)(x - 4)$.

◆ **Solution**

$$\begin{aligned}(x + 3)(x - 4) &= \overset{\text{F}}{(x)}(\overset{\text{O}}{x}) + (\overset{\text{I}}{x})(\overset{\text{L}}{-4}) + (\overset{\text{O}}{3})(\overset{\text{I}}{x}) + (\overset{\text{L}}{3})(\overset{\text{L}}{-4}) \\ &= x^2 - 4x + 3x - 12 \\ &= x^2 - x - 12\end{aligned}$$

The product $(x + 3)(x - 4)$ is $x^2 - x - 12$.

◆ **Example 2**

Use the FOIL method to find the product $(2x - 3)(3x - 1)$.

◆ **Solution**

$$\begin{aligned}(2x - 3)(3x - 1) &= \overset{\text{F}}{(2x)}(\overset{\text{O}}{3x}) + (\overset{\text{I}}{2x})(\overset{\text{L}}{-1}) + (\overset{\text{O}}{-3})(\overset{\text{I}}{3x}) + (\overset{\text{L}}{-3})(\overset{\text{L}}{-1}) \\ &= 6x^2 - 2x - 9x + 3 \\ &= 6x^2 - 11x + 3\end{aligned}$$

The product $(2x - 3)(3x - 1)$ is $6x^2 - 11x + 3$.

Use the FOIL method to find each product.

13. $(x + 2)(x + 5)$

14. $(x + 3)(x - 4)$

15. $(x - 5)(x - 3)$

16. $(2x - 3)(x + 3)$

17. $(2x - 5)(2x - 5)$

18. $(5x - 4)(5x - 4)$

19. $(4x + 1)(x - 1)$

20. $(2x - 3)(x - 2)$

21. $(-3x + 4)(2x - 3)$

ANSWERS

17. $-5 + 2a + 3a^2$

18. $-5e^3 + 4e^2 - 2e$

19. $-2x^2 + 2x + 8$

20. $-8x + 3$

21. $6x^2 - x + 3$

22. $x^2 + 3x - 7$

23. $3x^2 + 2$

24. $-x + 6$

Lesson 9.2

1. $2x + 6$

2. $6x - 6$

3. $x^2 - 3x$

4. $-x^2 + x$

5. $2x^2 + 4x$

6. $3x^2 - 3x$

7. $2x^2 - 4x$

8. $6x^2 + 4x$

9. $x^2 + 3x + 2$

10. $x^2 + x - 2$

11. $x^2 - x - 2$

12. $x^2 - 3x + 2$

13. $x^2 + 6x + 9$

14. $x^2 - 6x + 9$

15. $x^2 - 9$

16. $x^2 - 9$

17. $2x^2 + 5x + 3$

18. $2x^2 - 5x - 2$

19. $3x^2 - 4x - 4$

20. $6x^2 - x - 2$

Lesson 9.3

1. $4x + 20$

2. $5x - 10$

3. $2x^2 - 2x$

4. $6x^2 + 2x$

5. $-5x^2 + 30x$

6. $3x^2 + 9x$

7. $x^2 + 5x + 4$

8. $x^2 + 5x + 6$

9. $x^2 - 2x - 15$

10. $2x^2 + 7x + 6$

11. $3x^2 - 18x + 15$

12. $12x^2 - 25x + 12$

13. $x^2 + 7x + 10$

14. $x^2 - x - 12$

15. $x^2 - 8x + 15$

16. $2x^2 + 3x - 9$

17. $4x^2 - 20x + 25$

18. $25x^2 - 40x + 16$

19. $4x^2 - 3x - 1$

20. $2x^2 - 7x + 6$

21. $-6x^2 + 17x - 12$



Reteaching

9.8 Solving Equations by Factoring

◆ Skill A Using the Zero-Product Property

Recall If a and b are real numbers such that $ab = 0$, then $a = 0$ or $b = 0$.

◆ Example

Solve the equation $(x + 3)(x - 1) = 0$.

◆ Solution

Use the Zero-Product Property. If the product of two factors is equal to 0, then one of the factors must be 0. Set each factor equal to 0 and solve.

First factor

$$(x + 3) = 0$$

$$x = -3$$

Second factor

$$(x - 1) = 0$$

$$x = 1$$

Check by substituting in the original equation.

Substitute -3 for x : $(-3 + 3)(-3 - 1) = 0(-4) = 0$

Substitute 1 for x : $(1 + 3)(1 - 1) = 4(0) = 0$

The equation $(x + 3)(x - 1) = 0$ has two solutions. The solutions are -3 and 1 .

Solve by factoring.

1. $(x - 3)(x - 2) = 0$

2. $(x + 5)(x - 4) = 0$

3. $(x + 4)(x - 4) = 0$

4. $(x - 6)(x - 6) = 0$

5. $(x - 2.8)(x + 5.2) = 0$

6. $\left(x + \frac{2}{3}\right)(x - 1) = 0$

7. $(2x - 4)(3x - 6) = 0$

8. $(5x + 3)(4x + 7) = 0$

9. $\left(\frac{3}{5}x + 6\right)\left(\frac{7}{8}x - 1\right) = 0$

10. $(4.7x + 14.1)(2.4x - 3.6) = 0$

ANSWERS

21. $(mn + p)(mn - p)$

22. $(s^2 + t^2)(s + t)(s - t)$

Lesson 9.7

1. $(x + 1)(x + 2)$

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

3. $(x - 7)(x - 3)$

4. $(x + 5)(x - 1)$

5. $(x + 8)(x + 3)$

6. $(x - 4)(x - 4)$

7. $(x - 2)(x + 1)$

8. $(x + 4)(x - 1)$

9. $(x + 3)(x + 1)$

10. $(x - 3)(x - 1)$

11. $(x + 4)(x - 2)$

12. $(x + 5)(x - 3)$

13. $(x + 5)(x - 3)$

14. prime

15. $(x + 3)(x - 4)$

16. $(x + 4)(x + 2)$

17. $(x - 2)(x - 18)$

18. $(x + 6)(x - 4)$

Lesson 9.8

1. 3 and 2

2. -5 and 4

3. -4 and 4

4. 6

5. 2.8 and -5.2

6. $-\frac{2}{3}$ and 1

7. 2

8. $-\frac{3}{5}$ and $-\frac{7}{4}$

9. -10 and $\frac{8}{7}$

10. -3 and 1.5

11. -2 and 6

12. 3

13. 2 and 7

14. -5 and -1

15. 2 and 5

16. -6 and 6

17. -4

18. -3 and 4

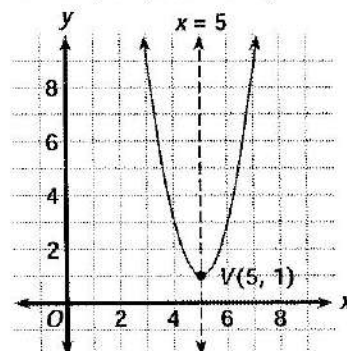
19. $-\frac{1}{3}$ and $\frac{1}{3}$

20. $-\frac{1}{2}$

Reteaching—Chapter 10

Lesson 10.1

1. vertex: (5, 1); axis of symmetry: $x = 5$



Adding and Subtracting Polynomials

Date _____

Simplify each sum.

1) $(-5 + 4x^2 - 2x^3) + (4 - 6x^2 + 6x^3)$

2) $(-3 + 5x^4 + 5x^3) + (-8 + 6x^3 - 7x)$

3) $(-2 + 4k^3 - k^2) + (-2k^2 - k^3 + 2)$

4) $(-3n^3 - 5 + 7n) + (n - 5n^3 + 8)$

5) $(-7v + 3v^4 + 3v^2) + (-7v - 3v^3 - 5v^2)$

6) $(-8 - 8x^2 + x^3) + (-5x^2 - 5 + 6x)$

7) $(-2 - 5n - 2n^3) + (5n - 2 - 4n^3)$

8) $(5v^3 - 8v + 5v^2) + (-6v - 8v^2 - v^3)$

Simplify each difference.

9) $(12x^5 + 8x^3 + 5) - (3x^3 - 1 - 7x^5)$

10) $(5x^4 - 13x - 3x^2) - (5x - x^2 + 14x^4)$

11) $(-14n^2 - 2n^5 + 7) - (10n^5 - n^2 - 3)$

12) $(-12x^5 - x + 1) - (-x^5 + 10x + 7)$

$$13) (13b + 8b^5 - 11b^3) - (4b^3 - 13b + 3b^5)$$

$$14) (-7n - 3n^4 + 5n^5) - (5n^4 + 10n + 5n^3)$$

$$15) (12b^5 + 5b^4 - 11) - (-13 + 5b^4 - 7b^5)$$

$$16) (2x^4 + 5x - x^5) - (-9x^5 - 13x - 2x^4)$$

Simplify each expression.

$$17) (-2 - n^4 - 6n) - (-3 + 7n - 5n^2)$$

$$18) (8a^3 + 8a^2 - 3a) - (8a^2 + 6a^3 - 7a)$$

$$19) (-x^2 - 6x^4 + 2x^3) - (8x^3 + 5x^4 - 8x^2)$$

$$20) (-3a^4 + 7a + a^3) - (-5a^4 - a + 3)$$

$$21) (6 + 7p^2 - 4p) - (8p - 1 - 3p^4)$$

$$22) (-6k + 7k^4 - 8k^2) + (-6k^2 - k^4 + 4k)$$

$$23) (-1 - x^4 + 5x) - (-5x^4 - 7x^3 - 3)$$

$$24) (2 + 8x^4 - 6x^2) - (-3x^2 - 2x^4 + 1)$$

$$25) (6a^4 - 6a^3 - 5) - (3a^2 + 4a^3 + 1)$$

$$26) (-2n - 7n^2 + 3) - (-7 - 4n^2 - 4n)$$

Multiplying Polynomials(Monomial to Bi and Tri)

Date _____

Find each product.

1) $6x(3x - 4)$

2) $3(5k + 2)$

3) $-4(7v - 8)$

4) $5(x - 4)$

5) $-7(6p + 5)$

6) $2n^2(2n + 8)$

7) $-4(3b + 2)$

8) $-7x(-4x - 5)$

9) $4(-7v - 5)$

10) $-4(-6r + 7)$

11) $-8(-3a^2 + 6a + 7)$

12) $-2x^2(6x^2 + 8x + 5)$

13) $-6(-4x^2 - 3x + 7)$

14) $7n^3(5n^2 + 7n + 5)$

15) $-6(-3b^2 - 7b - 3)$

16) $-6n(-4n^2 - 8n - 7)$

17) $-7(-2x^2 + 2x + 1)$

18) $6(-3x^2 - 5x - 6)$

19) $3(-2x^2 + 4x - 3)$

20) $4(8b^2 - b + 1)$

21) $-(6x + 4y)$

22) $-4m(5m + n)$

23) $-5v^2(8u + v)$

24) $-(-4u + 4v)$

25) $-5(-2a + 2b)$

26) $3y(3x + 4y)$

27) $7x(6x + y)$

28) $-4(-6x - 2y)$

29) $-8y(-6x + 6y)$

30) $2(-7m + 6n)$

Multiplying Polynomials (Binomials and Trinomials)

Date _____

Find each product.

1) $(x + 1)(-5x + 8)$

2) $(3n + 4)(6n - 2)$

3) $(-8k - 4)(-5k - 2)$

4) $(-6r - 7)(-6r + 3)$

5) $(-6m + 1)(-7m + 6)$

6) $(-4v + 6)(-8v - 8)$

7) $(6x - 7)(-3x + 3)$

8) $(p - 2)(8p - 6)$

9) $(-3n + 5)(3n - 8)$

10) $(-5m - 3)(-m - 1)$

11) $(2p + 5)(8p^2 + 5p - 5)$

12) $(2m + 5)(5m^2 + 6m - 3)$

13) $(3n + 7)(-6n^2 - 2n - 4)$

14) $(-8p + 1)(-4p^2 + 2p + 7)$

15) $(-x + 8)(-x^2 - 8x + 3)$

16) $(-2n + 5)(-8n^2 + 8n + 3)$

17) $(-7n + 5)(7n^2 + 3n - 5)$

18) $(2a + 5)(3a^2 + 3a - 8)$

19) $(-6a - 2)(3a^2 - a - 1)$

20) $(-2m + 7)(8m^2 - 2m - 2)$

21) $(-7m + 2n)(2m - 2n)$

22) $(u - 4v)(3u - 2v)$

23) $(-7x + 8y)(-6x + 2y)$

24) $(-4x + 7y)(-7x - 2y)$

25) $(u + 3v)(-u - 6v)$

Multiplying Polynomials with Special Cases

Date _____

Find each product.

1) $(-8r + 6)(-8r - 6)$

2) $(1 - a)(1 + a)$

3) $(-8p + 3)(-8p - 3)$

4) $(3v - 3)(3v + 3)$

5) $(-2 - 8k^4)(-2 + 8k^4)$

6) $(2n - 7)(2n + 7)$

7) $(m - 6)(m + 6)$

8) $(7x^3 - 4)(7x^3 + 4)$

9) $(3n - 2)(3n + 2)$

10) $(-8 + n^2)(-8 - n^2)$

11) $(2b^2 - 4)^2$

12) $(-6m^2 - 4)^2$

13) $(x^3 - 6)^2$

14) $(-3k + 3)^2$

15) $(8k - 6)^2$

16) $(-5m + 3)^2$

17) $(x + 2)^2$

18) $(5 - 8n)^2$

19) $(7x - 8)^2$

20) $(2x - 5)^2$

21) $(-6a^2 + b^2)(-6a^2 - b^2)$

22) $(-x - 4y)(-x + 4y)$

23) $(n^3 + 3m^3)(n^3 - 3m^3)$

24) $(3y^5 - 2x^2)(3y^5 + 2x^2)$

25) $(-3u + 7v)(-3u - 7v)$

26) $(7x + 4y^3)(7x - 4y^3)$

27) $(-x - 8y)^2$

28) $(3x - 4y)(3x + 4y)$

29) $(-8x^4 - 5y)(-8x^4 + 5y)$

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