

Alg1 7.1 Worksheet

Name _____ Per _____

*This material is covered in sections 7-1 and 7-2 in the book if you need help.***For # 1 – 12, simplify by performing the indicated operation.**

1) $(3z^2 + z - 4) + (-z^2 + 2z - 3)$

2) $(8c^2 - 4c + 1) + (-3c^2 + c + 5)$

3) $(10b^2 - 3b + 2) - (4b^2 + 5b + 1)$

4) $(-4m^2 + 3m - 1) - (m + 2)$

5) $(3m + 4) - (2m^2 - 6m + 5) + (m - 2m^2)$

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

7) $3x^3(x - 7)$

8) $-x(7x^2 - 12x + 85)$

9) $6x(9x - 11)$

10) $-9y^4(4y^2 - 2y)$

11) $8h(h^2 - 3h - 5)$

12) $(3x - 7)12x$

13) An animal shelter purchases crates for their dogs and cats. A large crate has a volume of $3x^3 + 5x^2 - 6$ units. A medium crate has a volume of $x^3 + 7x - 2$ units. The shelter purchases 3 large crates and 2 medium crates. What polynomial expression represents total volume of the purchased crates?

For #14 – 17, Use the following: $h(x) = 3x^2 + 5x - 2$, $g(x) = -x^2 - 7x - 5$, $k(x) = -2x^5$

14) Find $f(x) = h(x) + g(x)$.

15) Find $b(x) = h(x) - g(x)$.

16) Find $a(x) = k(x) \cdot g(x)$

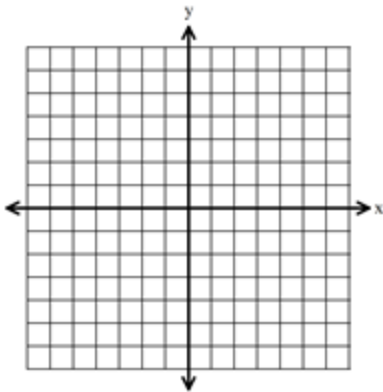
17) Find $d(x) = k(x) \cdot h(x)$

18) Simplify: $\frac{1}{4}x^3(12xy^5 - 16y^2 + 20xy)$

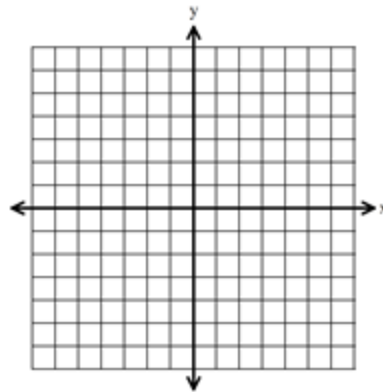
19) Simplify: $\frac{(3a^3b^4)^2}{6a^{-1}b^{15}}$

20) Translate the graph of $f(x) = -2^x$ right 4 units. Write the equation after the transformation.

21) Graph $y = \left(\frac{1}{2}\right)^{x+3} - 1$



22) Graph $y = -\left(\frac{1}{2}\right)^{x-2}$



For #23 – 24, use the graph of #21.

23) Domain: Range:

For #25 – 26, use the graph of #22.

25) Domain: Range:

24) What is the transformation from $y = \left(\frac{1}{2}\right)^x$

26) What is the transformation from $y = \left(\frac{1}{2}\right)^x$

Alg1 7.2 Worksheet

Name _____ Per _____

This material is covered in sections 7-2 and 7-3 in the book if you need help or google "algebra foil"

For # 1 – 10, find the product.

1) $(3x + 1)(2x - 5)$

2) $(2y + 3)(y - 5)$

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

4) $(x - 4)(x + 4)$

5) $(2x - 3)(x - 8)$

6) $(x - 4)(x + 9)$

7) $(p + 2)(3p^2 + 1)$

8) $(3d + 10)(2d - 1)$

9) $(n + 1)(n^2 + 4n + 5)$

10) $(w - 3)(w^2 + 8w + 1)$

For #11-13, simplify if $f(x) = (3x - 1)$ and $g(x) = (2x + 4)$

11) $h(x) = f(x) \cdot g(x)$

12) $h(x) = f(x) + g(x)$

13) $h(x) = f(x) - g(x)$

14) Simplify the expression: $a(3a + 1) + (a + 1)(a - 1)$

For #15 – 23, simplify each expression.

15) $(x - 9)^2$

16) $(m + 11)^2$

17) $(5x + 2)^2$

18) $(-4p + 5)^2 - 7$

19) $(2x - y)^2$

20) $(a - 8)(a + 8)$

21) $(5r + 1)(5r - 1)$

22) $(7p - 2)(7p + 2)$

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

24) What would you have to multiply $(x - 12)$ by to have a product of $x^2 - 144$?

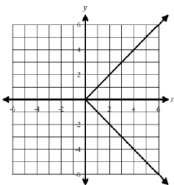
- A) $(x + 12)$ B) $(x - 144)$ C) $(x^2 - 144)$ D) $(x - 12)$

25) If $a, b,$ and c are positive integers such that $a^b = x$ and $c^b = y$, then $xy = ?$

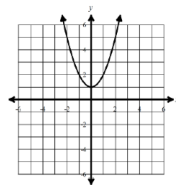
- A) ac^b B) ac^{2b} C) $(ac)^b$ D) $(ac)^{2b}$ E) $(ac)^{b^2}$

For #26 – 27, use the options below.

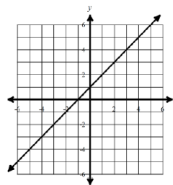
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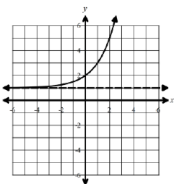
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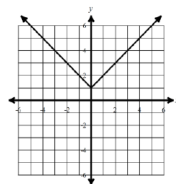
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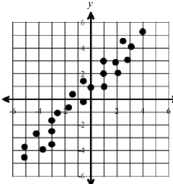
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I.



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26) Which option(s) is not a function?

27) Which option(s) have a domain of all real numbers?

Alg1 7.3 Worksheet

Name _____ Per _____

This material is covered in section 7-4 in the book if you need help

For #1 – 9, factor out the greatest common factor.

1) $10x - 10y$

2) $8x^2 + 20y$

3) $4x^2 - 4x$

4) $2m^2 + 6mn$

5) $9a^5 + a^3$

6) $6w^3 - 14w^2$

7) $-11x^3y + 33xy - 44xy^2$

8) $5a^2b^2 - 9cd + 15a$

9) $18xy - 24xz + 21z$

10) One factor of $42ab^2 - 48ab$ is $(7b - 8)$. What is the other factor?

- A) $6ab^2$ B) $7ab$ C) $6ab$ D) $7b^2$

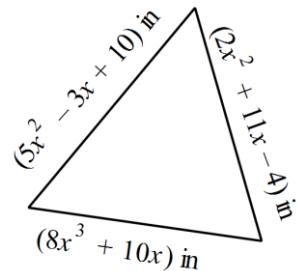
For #11 – 13, find each product. Try to do these without showing work, if possible!

11) $(x + 3)(x + 4)$

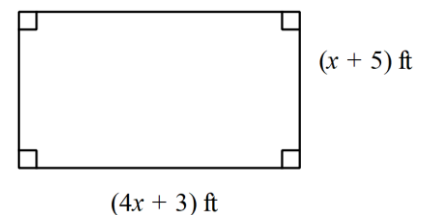
12) $(x - 6)(x + 6)$

13) $(4a + 9)(a - 2)$

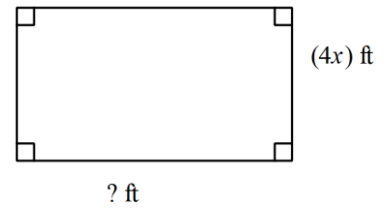
14) Given the triangle shown to the right. Write a polynomial expression to represent the perimeter of the triangle. Simplify your expression.



15) Write a polynomial expression to represent the area of the rectangle shown below, if $A = bh$. Simplify.



16) A rectangle has an area that can be represented by $(8x^3 + 20x^2 + 12x) \text{ ft}^2$. If the height of the rectangle is $4x \text{ ft}$, then what expression can represent the base?



For #17 – 18, Use the system $\begin{cases} 12x + 3y = 40 \\ 7x - 4y = 38 \end{cases}$

17) **How many** solutions does this system have? How do you know?

18) Explain how you can tell that $(2.5, -3.4)$ is not a solution for this system.

For #19 – 20, simplify each expression.

19) $(3x^2 + 5x - 2) + (-7x^2 + 6x + 1)$

20) $(3x - 2)(2x + 1) - (5x^2 + 11x - 9)$

For #21 – 22, solve for x.

21) $3 + 2^{x-5} = 35$

22) $3^{2x-13} = 27$

Alg1 7.4 Worksheet

Name _____ Per _____

This material is covered in section 7-5 in the book if you need help

For #1 – 18, factor each expression completely.

1) $x^2 + 8x + 7$

2) $k^2 - 7k + 10$

3) $w^2 - 12w - 13$

4) $x^2 - 81$

5) $y^2 - 4y - 45$

6) $x^2 - 6x + 9$

7) $x^3 + 2x^2 - 15x$

8) $5y^2 - 25y - 120$

9) $-x^2 - 13x - 30$

10) $3x^2 + 30x + 75$

11) $-x^2 + 49y^2$

12) $x^2 - 25$

13) $-8x^2 + 16x - 8$

14) $x^2 + 12x + 36$

15) $x^6 - 64b^2$

16) $-x^2 + 16x - 64$

17) $-2x^2 - 2x + 84$

18) $2x^3 - 12x^2 + 18x$

Alg1 7.5 Worksheet

Name _____ Per _____

**This material is covered in section 7-6 in the book if you need help*

For #1 – 16, factor each expression completely.

1. $y^2 + 15y + 44$

2. $3a^2 - 13a + 4$

3. $c^2 - 11cd + 18d^2$

4. $-5n^2 + 13n + 6$

5. $25x^2 - y^2$

6. $-32x^2 + 50$

7. $x^2 - 121b^{10}$

8. $-16a^4x^2 + 49a^4$

9. $3x^2 - 2x - 8$

10. $24x^3 - 37x^2 - 5x$

11. $-3x^2 + 36x - 96$

12. $3x^2 + 15x$

13. $10x^5 - 40x$

14. $-7x^2 - 19x + 6$

15. $-3b^2 + 54b - 243$

16. $-6x^2 - 8xy + 14y^2$

For #17 – 18, simplify the following expressions.

17. $-9x(x^4 + 8x)$

18. $3(x^2 + 5x) - (x^3 + 7x^2 - 10x)$

For #19 – 20, list the transformations from the parent function $y = 2^x$.

19. $y = \frac{1}{5}(2)^{x+2}$

20. $y = -3 \cdot 2^{x+1} - 4$

Alg1 7.6 Worksheet

Name _____ Per _____

For #1 – 13, factor each polynomial completely.

1) $x^4 - 81$

2) $x^4 - 256$

3) $3x^3 - 3x$

4) $3a^2 + 24a + 45$

5) $25w^2 - 20w + 4$

6) $n^3 - 8n^2 - 20n$

7) $-18a^2 - 12a - 2$

8) $2z^2 - 14z + 12$

9) $5a^4 - 80b^{12}$

10) $-6x^2 + 4x^4$

11) $a^2 + 10ab + 24b^2$

12) $80x^3 - 40x^2 + 5x$

13) $12b^2 - 27$

14) Add: $(5x^3 - 7x + 12) + (6x^2 + 5x - 8)$

15) Multiply: $(3x + 5)^2$

16) Simplify: $-2x(-6x^2 + 3x) - (5x^2 - x - 1)$

17) Factor: $-3x^8 + 75y^6$

For #18 – 21, simplify with no negative exponents in the final answer.

18) $(x^3y^5)^{-3}$

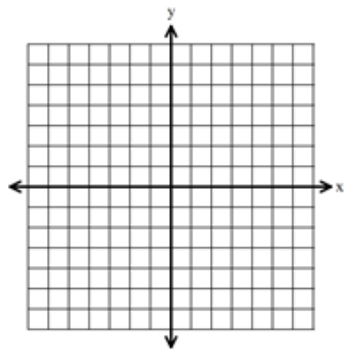
19) $\frac{x^{-3}y^5z^{-2}}{x^3y^{-8}z^3}$

20) $(-5x^{10}y^{35})(6x^{45}y^{15})$

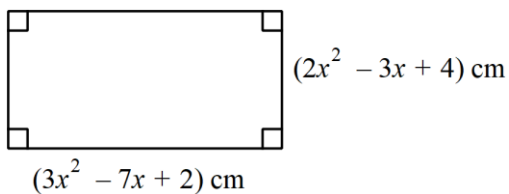
21) $\frac{(x^2)^3}{(-6x^3)^2}$

22) Graph: $y = -3^{x-2} + 4$

23) What is the domain and range of the function graphed in #22?



24) A rectangle has length of $(3x^2 - 7x + 2)cm$ and height of $(2x^2 - 3x + 4)cm$. Write a polynomial expression for the perimeter of the rectangle. Hint: A rectangle has 4 sides, with opposite sides congruent.



Alg1 Chapter 7 Practice Test

Name _____

For #1 – 2: Choose the best answer. Show your work!

1) Which of the following is a factor of $3x^2 - x - 4$?

- A. $(x + 4)$ B. $(x + 1)$
C. $(3x + 4)$ D. $(x - 3)$

2) The polynomial $x^2 + 11x + 24$ is factorable and one factor is $(x + 3)$. What is the other factor?

- A. $(x - 6)$ B. $(x + 12)$
C. $(x + 8)$ D. $(x - 8)$

3) Melissa found the sum of $5x^2 + x + 1$ and $6x^3 + 5 + 7x$ to be $11x^2 + 6x + 8$. Explain in words the error Melissa made, and then correctly find the sum.

4) Which of the following are equivalent to $y = -5x^2 + 125$?

Choose all that apply.

I.	$y = -5(x + 5)(x - 5)$
II.	$y = 5(5 - x)(x + 5)$
III.	$y = -5(x - 5)(x - 5)$
IV.	$y = -5(x^2 + 10x + 25)$

5) A mailing store sells boxes for shipping and storage. A large box has a volume of $5x^3 - 2x^2 + 10$ units cubed. A medium box has a volume of $3x^3 + x - 2$ units cubed. A customer buys four large boxes and three medium boxes. What is the total volume of the purchased boxes?

For # 6 – 15: Simplify each expression.

6) $(2a^2 + 4b^2 - 3) + (3a^2 + 6b^2 + 4b)$

7) $(5x^4 + 5x^6 - 5) + (9x^6 + 7 - 3x^4)$

8) $(3z^3 + 2z^2 + 7) - (2z^3 - 3z^2 - 6)$

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

Simplify.

10) $20x(3 - 2x)$

11) $3x^2(2x^2 - 5x - 3)$

12) $(x + 3)(x + 7)$

13) $(x + 11)(x - 11)$

14) $(x + 12)^2$

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

For #16 – 24, factor each expression.

16) $7x^2 - 35x$

17) $4x^2 - 25$

18) $x^2 + 7x + 12$

19) $x^2 - x - 12$

20) $x^2 - 144$

21) $x^4 - 16$

22) $2x^2 + 16x + 32$

23) $-x^2 - 7x + 8$

24) $4x^2 - 3x - 10$

For #25 – 27, factor each expression completely.

25) $2a^2 - 5a - 3$

26) $y^3 + 12y^2 - 28y$

27) $6a^2 - 24$

28) The polynomial $x^2 + 11x + 30$ is factorable. One factor is $(x + 6)$. What is the other factor?

29) Given that $f(x) = 3x - 2$ and $g(x) = 5x + 4$. Find $-3f(x) \cdot g(x)$.

30) Which of the following are equivalent to $y = -2(b - 9)^2$? **Choose all that apply.**

I.	$y = 36b - 2b^2 - 162$
II.	$y = -2b^2 + 36b - 162$
III.	$y = 2(b^2 - 18b + 81)$
IV.	$y = -2(b^2 - 18b + 81)$