- 1. The equation $h = 241m^{-\frac{1}{4}}$ predicts a mammal's heart rate, h, in beats per minute, based on the mammal's mass, m, in kilograms. What is the **approximate** heart rate, in beats per minute, of a polar bear with a mass of 326 kilograms?
 - A 57
 - B 67
 - C 82
 - D 92
- 2. What is the logarithmic form of the equation $y = 20^{-\frac{3}{2}}$?
 - A $\log_{20} y = -\frac{3}{2}$
 - $B \qquad \log_{\frac{3}{2}} 20 = y$
 - $C \qquad {}^{-}\log_{\frac{3}{2}}y = 20$
 - $\mathbf{D} \qquad \log_{20} \left(\frac{-3}{2} \right) = y$

- 3. Solve for *x*: $6^{3x} = 30$
 - A $x = 3 \ln 5$
 - B $x = \ln 30 3 \ln 6$

$$C \qquad x = \frac{\ln 10}{\ln 6}$$

$$D \qquad x = \frac{\ln 30}{3\ln 6}$$

4. What is the solution of the equation $e^{x}e^{2x} = 4$?

A
$$x = \sqrt{\frac{\ln 4}{2}}$$

B
$$x = \frac{4}{3e}$$

- $\mathbf{C} \qquad x = \ln\left(\frac{4}{3}\right)$
- D $x = \frac{\ln 4}{3}$

- 5. Simplify: (2+6i) (3-5i) (5-3i)
 - A $^{-}6-2i$
 - B -6 + 14i
 - C -4 4i
 - D -4 + 16i
- 6. Which expression below is equivalent to 4i(12-7i)?
 - A $^{-}28 + 48i$
 - B 28+48*i*
 - C 48 + 28i
 - D $^{-48+28i}$
- 7. Simplify: $\frac{1+2i}{2-3i}$
 - A $\frac{8+i}{7}$
 - B $\frac{-4+7i}{13}$
 - C $\frac{8+7i}{7}$
 - D $^{-4}+7i$

- 8. What are the values of x and y when (3 - 2i) - (x + yi) = (2 - 3i)? A x = -1, y = -i
 - B x = 1, y = i
 - C x = 1, y = 5
 - D x = 1, y = 1
- 9. Divide $(x^3 2x^2 + 6x 8)$ by (x 2).
 - $A \qquad x^2 + 6 + \frac{4}{x 2}$
 - B $x^2 4x + 14 \frac{36}{x 2}$
 - $C \qquad x^2 3x + 1 \frac{9}{x 2}$
 - D $x^2 + x + 9 + \frac{3}{x 2}$

10.	Which expression is equivalent to
	$\frac{x^2-9}{2x^2-5}$?
	$2x^2 + 5x - 3$

$$A \qquad \frac{x-3}{2x-1}$$

$$B \qquad \frac{x+3}{2x+1}$$

$$C \qquad \frac{x-3}{2x-3}$$

D
$$\frac{x+3}{2x+3}$$

- 11. Which binomial is a factor of $(9x^2 12x + 4)?$
 - A 3x + 4
 - B 3x + 2
 - C 3x + 1
 - D 3x 2



- $A \qquad \frac{1+x}{1-x}$ $B \qquad \frac{1-x}{1+x}$
- C $\frac{1}{x}$

-1

A $x^{4} + y^{4}$ B $x^{4} + 4xy + y^{4}$ C $x^{4} + 4x^{3}y + 4x^{2}y^{2} + 4xy^{3} + y^{4}$ D $x^{4} + 4x^{3}y + 6x^{2}y^{2} + 4xy^{3} + y^{4}$

Expand: $(x+y)^4$

13.

14. Simplify:
$$\frac{3x^{-1}}{y^{-1}} \cdot \frac{2y}{15x^2}$$

A
$$\frac{2y^2}{45x^3}$$

$$\mathbf{B} = \frac{45x^3}{2y^2}$$

$$\mathrm{C} = rac{5x^3}{2y^2}$$

$$D \qquad \frac{2y^2}{5x^3}$$

Page 3

D

Published December 2007. May reproduce for instructional and educational purposes only; not for personal or financial gain.

15. Matrix G shows the gallons of milk sold at a dairy over a two-week period. Matrix D shows the dollar amount per gallon.

		Gallons of Milk Sold		
		Whole	Low Fat	Skim
G -	Week 1	181	450	102
u –	Week 2	194	530	127

		Dollar Amount per Gallon		
		Revenue	Advertising Fee	
		(Φ)	(ð)	
	Whole	2.89	0.29	
D =	Low Fat	2.79	0.32	
	Skim	2.69	0.35	

If matrix P is the product of G and D, which element in matrix P represents the total advertising fees for Week 1?

$$P = G \times D = \begin{bmatrix} p_{11} & p_{12} \\ p_{21} & p_{22} \end{bmatrix}$$

- A p_{11}
- B p_{21}
- $C p_{12}$
- D p_{22}

- 16. Suppose x varies jointly as y and z, and x = 9 when y = 2 and z = 7. What is the *approximate* value of x when y = 12 and z = 2?
 - A 2.6
 - B 15.4
 - C 37.3
 - D 54.0

- 17. The amount of simple interest earned on a savings account varies jointly with time, t (in years), and the principal, p (in dollars). After 5 years, interest on \$800 in this savings account is \$260.00. What is the annual interest rate (constant of variation)?
 - A 7.4%
 - B 6.5%
 - C 5.4%
 - D 2.7%

End of Goal 1 Sample Items

In compliance with federal law, including the provisions of Title IX of the Education Amendments of 1972, the Department of Public Instruction does not discriminate on the basis of race, sex, religion, color, national or ethnic origin, age, disability, or military service in its policies, programs, activities, admissions or employment.

Algebra 2 Goal 1 Sample Items Key Report

1	Objective: 1.01 Simplify and perform	operations with rational exponent	s and logarithms (comm	non and
	natural) to solve prok Thinking Skill:	lems. Applying	Correct Answer:	А
2	Objective: 1.01 Simplify and perform natural) to solve prok Thinking Skill:	operations with rational exponent lems. Applying	s and logarithms (comm Correct Answer:	non and A
3	Objective: 1.01 Simplify and perform natural) to solve prob	operations with rational exponent olems.	s and logarithms (comm	non and
	Thinking Skill:	Applying	Correct Answer:	D
4	Objective: 1.01 Simplify and perform natural) to solve prok Thinking Skill:	operations with rational exponent lems. Applying	s and logarithms (comm Correct Answer:	non and D
5	Objective: 1.02 Define and compute Thinking Skill:	with complex numbers. Applying	Correct Answer:	В
6	Objective: 1.02 Define and compute Thinking Skill:	with complex numbers. Applying	Correct Answer:	В
7	Objective: 1.02 Define and compute v Thinking Skill:	with complex numbers. Applying	Correct Answer:	В
8	Objective: 1.02 Define and compute Thinking Skill:	with complex numbers. Applying	Correct Answer:	D
9	Objective: 1.03 Operate with algebra problems.	ic expressions (polynomial, rationa	l, complex fractions) to	solve
	Thinking Skill:	Applying	Correct Answer:	А

Algebra 2 Goal 1 Sample Items Key Report

10	Objective: 1.03			
	Operate with algebra problems.	ic expressions (polynomial, rationa	al, complex fractions) to	solve
	Thinking Skill:	Applying	Correct Answer:	А
11	Objective: 1.03	is every science (nelynemial rations	a complex fractions) to	مماليم
	problems.	ne expressions (polynomial, rationa	a, complex fractions) to	sorve
	Thinking Skill:	Applying	Correct Answer:	D
12	Objective: 1.03 Operate with algebra	ic expressions (polynomial, rationa	al, complex fractions) to	solve
	problems. Thinking Skill:	Applying	Correct Answer:	Α
13	Objective: 1.03 Operate with algebra problems.	ic expressions (polynomial, rationa	al, complex fractions) to	solve
	Thinking Skill:	Applying	Correct Answer:	D
14	Objective: 1.03 Operate with algebra	ic expressions (polynomial, rationa	al, complex fractions) to	solve
	Thinking Skill:	Applying	Correct Answer:	D
15	Objective: 1.04 Operate with matrice	es to model and solve problems.		G
	Thinking Skill:	Analyzing	Correct Answer:	С
16	Objective:1.05Model and solve probThinking Skill:	lems using direct, inverse, combine Applying	ed and joint variation. Correct Answer:	В
17	Objective: 1.05 Model and solve prob Thinking Skill :	lems using direct, inverse, combine Applying	ed and joint variation. Correct Answer:	В
	8 -		•	