

019A

Time: 2 Hours

NAME: _____

PART I: Do all your work in the back of the blue booklet. Write your answer on the line to the right of each problem. No partial credit allowed. 3 points each.

1. Factor $x^2 - 9$ and $x^2 - 64x$.
Which of the following is NOT a factor of either polynomial?
a) $x - 3$ b) $x + 3$ c) x d) $x - 8$ e) $x - 64$ _____
2. Completely factor $315x^6 + 18x^5 - 9x^4$. One of the factors is:
a) $5x - 1$ b) $9x^6$ c) $7x - 1$ d) $7x + 1$
e) $35x^2 + 2x$ _____
3. What is the greatest common factor of $16x^5y^2 - 72x^3y^9$?
a) $8x^3y^2$ b) $8x^5y^9$ c) $8x^8y^{11}$ d) $1152x^8y^{11}$
e) $8x^2y^7$ _____
4. Factor $6x^2 - 47x + 35$. One of the factors is:
a) $6x - 35$ b) $2x - 5$ c) $x - 7$ d) $x - 35$ e) $2x - 7$ _____
5. Factor $x^2 - 4x - 5$ and $x^2 + x - 2$.
Which of the following is NOT a factor of either polynomial?
a) $x - 2$ b) $x + 1$ c) $x - 1$ d) $x + 2$ e) $x - 5$ _____
6. Given the function $f(x) = 3x^2 - 2x + 6$, find $f(-8)$.
a) -170 b) 182 c) 598 d) 214 e) -202 _____
7. Solve $10x^2 - 3 = 13x$. The solutions are:
a) $-3/5$ and $1/2$ b) $3/2$ and $-1/5$ c) $8/5$
d) $-3/2$ and $1/5$ e) $3/5$ and $-1/2$ _____
8. Find the least common denominator for: $\frac{1}{12y - 30}$ and $\frac{1}{30y - 75}$.
a) $3(2y - 5)$ b) $90(2y - 5)(2y - 5)$
c) $(12y - 30)(30y - 75)$ d) $30(2y - 5)(2y - 5)$
e) $30(2y - 5)$ _____

15. Simplify the complex fraction:

$$\frac{\frac{3m + 27}{3m^3}}{\frac{2m + 18}{m^8}}$$

- a) $\frac{m^5}{2}$ b) $\frac{27m^6}{2m + 18}$ c) $\frac{2(m + 9)^2}{m^{11}}$ d) $\frac{27m^5}{20}$
- e) $\frac{m^5(m + 27)}{2m + 18}$
16. Find the slope of the straight line which passes through (2,-10) and (-13,3).
 a) 7/15 b) 7/11 c) -13/15 d) -13/11 e) -3/4
17. Find the slope of $19x - 5y = 17$.
 a) -19 b) 19 c) -17/5 d) 19/5 e) 5/19
18. Find the slope of the straight line $y = -3 + 4x$.
 a) -3 b) 4 c) -4/3 d) -4 e) 3
19. Find the equation of the straight line which passes through (5,7) and has a slope of -4.
 a) $5x + 7y = -4$ b) $4x + y = 27$ c) $4x + y = 2$
 d) $-4x + y = 27$ e) $7x + 5y = -4$
20. The equations $3x - 5y = -8$ and $y = -\frac{5}{3}x + 7$ are:
 a) distinct parallel lines.
 b) lines that intersect in exactly four points.
 c) perpendicular lines.
 d) distinct intersecting lines that are not perpendicular.
 e) the same line.
21. Find the x-intercept of the straight line $2x + 5y = -7$.
 a) -2/5 b) 2 c) 5 d) -7/5 e) -7/2
22. A sink can be filled by either of two faucets. The first faucet, used alone with the drain stopped, can fill the sink in 6 seconds. The second faucet, used alone with the drain stopped, can fill the sink in 13 seconds. The drain can empty a full sink in 7 seconds, assuming no water is being added. If both faucets are open and the drain is not stopped, how many seconds will it take to fill the sink?
 a) 12 b) 546/55 c) 26/3 d) 546/211 e) 4

23. The product of two integers is 30. The larger is 3 less than 9 times the smaller. Write down an equation that can be used to solve for the smaller integer, x .
- a) $9x^2 - 3 = 30$ b) $9x - 3 = 30x$ c) $(9x - 3)x = 30$
d) $(3 - 9x)x = 30$ e) $x = 30(3 - 9x)$
24. The current in a river moves at the rate of 10 miles per hour. If x represents the speed of a boat in still water, write down an expression which represents the time it takes for the boat to travel 197 miles downstream.
- a) $\frac{197}{10}$ b) $\frac{197}{x - 10}$ c) $\frac{207}{x}$ d) $\frac{197}{10 - x}$ e) $\frac{197}{x + 10}$

PART II: Do all your work in the front of the blue booklet.
Leave your answer there. Partial credit is allowed.

25. Solve the system by using the addition method: $3x - 2y = -5$
(the method of elimination) $5x + 7y = 33$
(7 points)
26. Solve by substitution: $x - 9y = -44$
 $3x - 4y = -40$
(7 points)
27. Graph: $3x + 2y = 12$
(5 points)
28. Graph: $3y \geq 15$
(4 points)
29. Graph: $x = 2y$.
(5 points)