

Instructor's Name: _____

Your Name: _____

Signature: _____

Circle the **time** your class meets:

OSU email: _____@buckeyemail

3:70a.m. **8:03** **9: 50** **10:30** **11: 35** **12:30** **1:30** **2:30** **3:30** **4:30** **5:30p.m.**

Directions: You have 90 minutes to complete this exam. There are 25 questions. Each question is worth 4 points. (There is no partial credit on multiple choice questions or questions 6 and 7). Partial credit is rare, but possible; so please show your work. Write your answers clearly, and use the space provided for the answer!

For problems 1 - 5, write the **letter** of the correct answer in the space provided. Only one answer is correct.

___ 1. Multiply: $(4y+9)(4y-9)$.

A) $16y^2 + 81$ B) $16y^2 - 81$ C) $16y^2 + 36y + 81$ D) $16y^2 + 36y - 81$ E) $16y^2 - 18$

___ 2. Find the x - and y -intercepts of the line $y = 3x + 9$.

A) $(-3, 0), (0, 9)$ B) $(-4, 0), (0, 10)$ C) $(-3, 0), (0, -9)$ D) $(0, -4), (10, 0)$ E) $(-4, 0), (0, -10)$

___ 3. Find the equation of the line, in slope-intercept form, that contains the point whose coordinates are $(2, 3)$ and has slope 5.

A) $y = -3x - 5$ B) $y = -5x + 13$ C) $y = 5x - 7$ D) $y = 3x - 1$ E) $y = 5x + 3$

___ 4. Multiply.
 $(6m^2n^3)(-3m^4n^3)(-5mn^3)$

A) $-90m^7n^9$ B) $-2m^7n^9$ C) $-90m^8n^{27}$ D) $90m^8n^{27}$ E) $90m^7n^9$

___ 5. Multiply: $(4v-3y)^2$.

A) $16v^2 - 24vy + 9y^2$ B) $16v^2 + 9y^2$ C) $16v^2 - 9y^2$ D) $16v^2 + 12vy + 9y^2$ E) $16v^2 - 12vy + 9y^2$

6. State whether the polynomial is a monomial, binomial, or a trinomial.
 $-5m^3 + 3m^2 - 9$

7. Multiply.
 $(-7x)(5x^4)$

8. Simplify: $(-z^7)^6$.

9. Solve for y . Write the equation in the form $y = mx + b$.

$$2x - 3y = 6$$

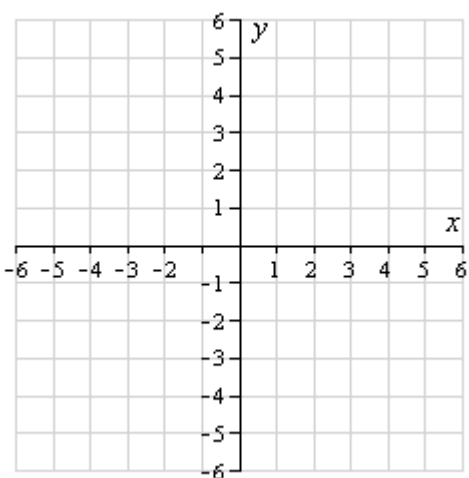
10. Find the equation of the line that passes through the y -intercept $(0, 7)$ and the point $(-5, 3)$.

11. Multiply.
 $-5v(9v - 2v^2)$

12. Multiply: $(3y^3 + 4y^2 + 3)(3y - 1)$.

13. Graph.

$$y = -3x - 2$$

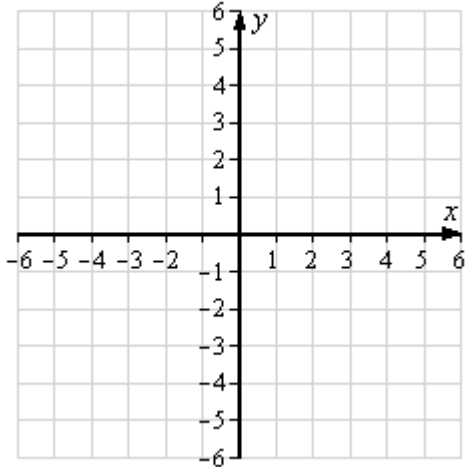


14. Find the slope of the line containing the given points.

$$P_1(0, -1), P_2(3, 4)$$

15. Graph by using x - and y -intercepts.

$$3x - 5y = 15$$



16. Add.

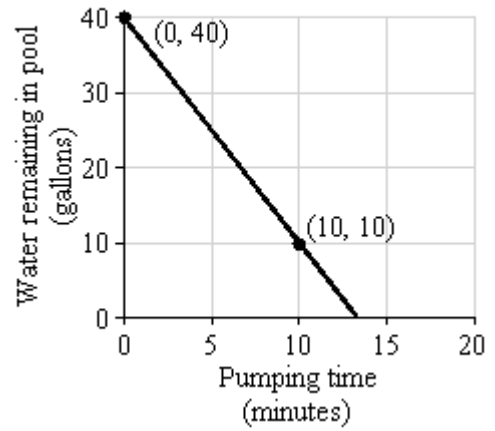
$$(5p^3 + 6p^2 + 8) + (6p^2 - 3p - 1)$$

17. The length of a rectangle is $7q$ m. The width is $(q + 7)$ m. Find the area of the rectangle in terms of the variable q .

18. Subtract.

$$(v^3 + 3v^2 + 8) - (3v^2 + 7v + 9)$$

19. The graph at the right shows how the amount of water in a child's small swimming pool decreases as the water is removed by an electric pump. Find the slope of the line, and write a sentence that states the meaning of the slope.



20. Multiply: $(a + 6)(5a + 1)$.

21. Find the equation of the line that passes through the points $(-3, -2)$ and $(3, 10)$.

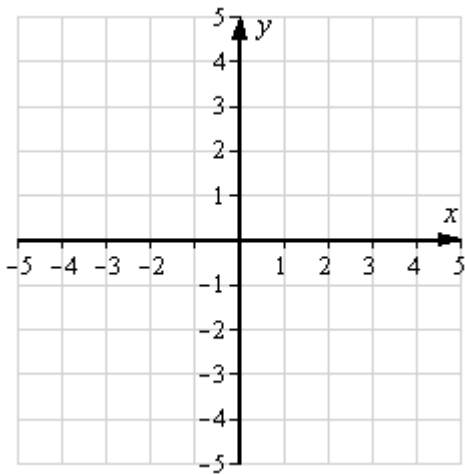
22. Multiply: $(x - 5)^2$.

23. Simplify: $(-x^6y^2)^8$.

24. Multiply: $4y^4(-3y^2 - 4y + 1)$.

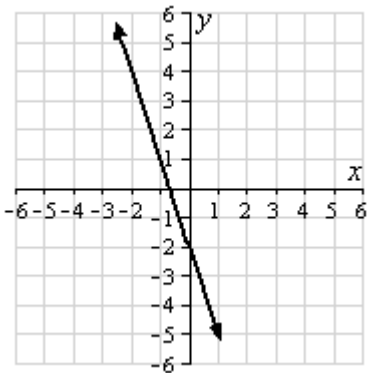
25. Graph.

$$x = 3$$



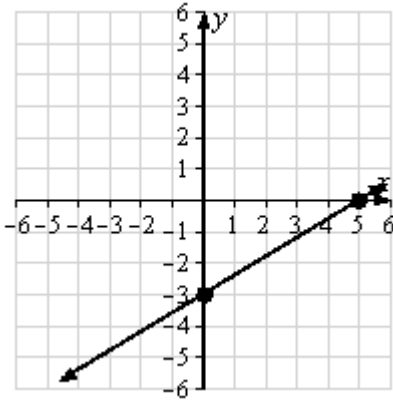
Answer Key

1. B
Grading: (4p) No partial credit.
2. A
Grading: (4p) No partial credit.
3. C
Grading: (4p) No partial credit.
4. E
Grading: (4p) No partial credit.
5. A
Grading: (4p) No partial credit.
6. trinomial | (4p) No partial credit.
7. $-35x^5$ | (4p) No partial credit.
8. z^{42} | (4p) 2 points for correct sign, 2 points for correct power.
9. $y = \frac{2}{3}x - 2$ | (4p) 2 points for exactly one computational mistake, no points thereafter.
10. $y = \frac{4}{5}x + 7$ | (4p) 2 points for correct slope, 1 point for exactly one computational mistake; no points for wrong formula for slope. 2 points for correct equation based on found slope (even if slope is incorrect).
11. $-45v^2 + 10v^3$ | (4p) 2 points for exactly one computational mistake, no points thereafter.
12. $9y^4 + 9y^3 - 4y^2 + 9y - 3$ | (4p) 2 points for exactly one computation error; no points thereafter.
13. (see graph) | (4p) 2 points for correct y-intercept. 2 points for another correct point, or for (clearly) pointed in the right direction slope. Allow for minor precision errors in graphing.



14. $\frac{5}{3}$ | (4p) 2 points for exactly one computational mistake, no points thereafter. Exception: 1 point for inverse formula for the slope (dx/dy), and correct numeric computation for this wrong formula.

15. (see graph) | (4p) 2 points for each correct intercept. Allow for minor precision errors in graphing.



16. $5p^3 + 12p^2 - 3p + 7$ | (4p) 2 points for exactly one mistake, no points for two or more. No points for major mistakes (e.g. combining monomials with different degrees into a single term).
17. $(7q^2 + 49q) \text{ m}^2$ | (4p) 2 points for correct formula of area. 2 points for correct formula in terms of the given variable, for the professed formula (even if the formula is not correct); 1 point for exactly one computational mistake. Unit (m^2) needs not be shown.
18. $v^3 - 7v - 1$ | (4p) 2 points for exactly one computational mistake, no points thereafter.
19. $m = -3$; the amount of water in the pool is decreasing by 3 gal/min. | (4p) 2 points for finding the slope (allow for minor approximation errors); no points for wrong formula (e.g. dx/dy instead of dy/dx). 2 points for the sentence, as long as it represents closely enough to what the meaning of the slope is **for this particular situation**; 1 point for general, but correct statements such as: "difference in y values over difference in x values".
20. $5a^2 + 31a + 6$ | (4p) 1 point for each correct term of FOIL, or 1 point for the correct degree two, and respectively correct constant, terms, and 2 points for the correct linear term (if students write the answer as a trinomial directly).
21. $y = 2x + 4$ | (4p) 2 points correct computation of slope; 1 point for exactly one computational mistake, no points thereafter; no points for incorrect slope formula. 2 points for correct point-slope formula, even with incorrect slope from first step; 1 point for exactly one computational mistake. Allow for not simplified answer (the question does NOT require simplification or a specific format: standard, slope-intercept).
22. $x^2 - 10x + 25$ | (4p) 2 points for exactly one computation error; no points thereafter. 1 point if the middle term is missing, but all other terms are correct.

23. $x^{48}y^{16}$ | (4p) 2 points for exactly one computational mistake, no points thereafter. Exception: only 1 point off for wrong sign.
24. $-12y^6 - 16y^5 + 4y^4$ | (4p) 2 points for exactly one computation error (both terms and powers); no points thereafter.
25. (see graph) | (4p) 3 points for a vertical, but incorrectly placed line. 1 point for graphing only the point (3,0). Allow for minor precision errors in graphing.

