

Name _____

BAKER UNIVERSITY
INTERMEDIATE ALGEBRA (MA-140)
PRACTICE TEST 2

READ carefully, **SHOW** all work, and **CIRCLE** answers

GOOD LUCK!

PART I. Multiple Choice (Each problem is worth 4 points)

1. Determine the quadrant in which the point (x, y) must be located if $y < 0$.

- A. I and III
- B. I and II
- C. I and IV
- D. II and III
- E. III and IV

2. Determine the slope of the line passing through the points $(2, 3)$ and $(4, 1)$.

- A. 1
- B. 2
- C. 3
- D. -1
- E. -2

3. Find the value of y if the point $(5, y)$ lies on a line containing the point $(4, 2)$ with slope $m = 3$.

- A. 0
- B. 3
- C. 6
- D. 5
- E. 7

4. Describe the line that passes through the points $(-1, 3)$ and $(2, 5)$.

- A. The line rises from left to right
- B. The line is horizontal
- C. The line falls from left to right
- D. The line is vertical
- E. None of the above

5. Simplify: $(7x^2 - 3x + 2) - (2x^2 - 3) - (2 - 3x + x^2)$.

- A. $4x^2 - 6x + 3$
- B. $6x^2 + 3$
- C. $4x^2 + 3$
- D. $6x^2 - 6x + 1$
- E. $4x^2 + 1$

6. Simplify: $\frac{(3x^3)^3}{9x^4}$.

- A. x^5
- B. x^2
- C. $3x^2$
- D. $3x^3$
- E. $3x^5$

7. Multiply and simplify: $4x(x - 5) + (2x + 6)(x - 2)$.

- A. $6x^2 - 30x + 12$
- B. $6x^2 + 30x - 12$
- C. $6x^2 + 18x + 12$
- D. $6x^2 - 18x - 12$
- E. $6x^2 - 22x - 12$

8. Multiply and simplify: $(x - 3)(x^2 + 3x + 9)$.

- A. $x^3 - 3x^2 + 9x - 27$
- B. $x^3 - 27$
- C. $x^3 - 3x^2 - 9x - 27$
- D. $x^3 + 3x^2 + 9x - 27$
- E. $x^3 + 3x^2 - 9x - 27$

9. For the polynomial function $f(x) = x^2 - 4x + 3$, find $f(t + 2)$.

A. $t^2 - 9t + 3$

B. $t^2 + 1$

C. $t^2 - 1$

D. $t^2 + 4t + 3$

E. $t^2 + 4t + 7$

10. Find a real number c so that the polynomial $x^2 - 18x + c$ is a perfect square trinomial.

A. 49

B. 64

C. 81

D. 100

E. 121

PART II. Show your work (Each problem is worth 6 points)

11. Find the length of the hypotenuse in the right triangle determined by the points $(2, 1)$, $(6, 1)$, and $(6, -2)$.

12. A manufacturing plant purchases a new machine for \$40,000. After 5 years, its depreciated value will be \$28,500.

(a) Assuming straight-line depreciation, write an equation of the line giving the value V of the machine in terms of time t in years.

(b) Find the value of the machine after 8 years.

13. Determine the x - and y -intercepts of the graph of the equation $-3x + 4y = 12$ and then sketch its graph.

14. Write an equation of the line that passes through the point $(-2, 3)$ and is

(a) parallel to the line $4x - 2y = 5$;

(b) perpendicular to the line $4x - 2y = 5$.

15. Suppose $f(x) = \begin{cases} x^2 + 1, & x \geq -1 \\ 2 - x, & x < -1 \end{cases}$. Find

A. $f(2) =$

B. $f(1) =$

C. $f(0) =$

D. $f(-1) =$

E. $f(-2) =$

16. Determine if the following equation represents y as a function of x ? Explain why.

A. $x + y = 1$

B. $x + y^2 = 1$

C. $x^2 + y = 1$

D. $x + |y| = 1$

E. $|x| + y = 1$

17. Factor: $20x^2y + 8x^2y^3$.

18. Factor: $x^3 - 5x^2 + 2x - 10$.

19. Factor $x^3 - 8x^2 + 15x$ completely.

20. Fill in the missing number: $x^2 + 12x + 50 = (x + 6)^2 + \underline{\hspace{2cm}}$.

EXTRA CREDIT: Factor $2x^2 + 11x + 12$ completely.