

**Math Assessment Exam<sup>1</sup>**  
**Robert F. Wagner Graduate School of Public Service**

1.  $0 - 3 - 2 =$

2.  $1 - (1 - 2) =$

3.  $-97 + 29 =$

4.  $\frac{1}{10} - \frac{1}{12} =$

5.  $\frac{1}{2} * (\frac{1}{3} - \frac{1}{6}) =$

6.  $\frac{\frac{2}{3}}{\frac{4}{5}} =$

7.  $(0.02) * (0.31) =$

8.  $\frac{.026}{.00013} =$

9. Express your answer as a decimal:  $\frac{1}{4} * 7 =$

10.  $12^2 =$

11.  $12^{-2} =$

---

<sup>1</sup> The following source materials were used in preparing this exam: (1) *Basic Math Self-Assessment*, Academic Resource Center, University of Baltimore ([http://www.ubalt.edu/arc/math\\_resources](http://www.ubalt.edu/arc/math_resources)); (2) *Graph Skills Pretest for Introductory Economics* and *Mathematics Test-Economics*, Center for Support of Teaching and Learning, Syracuse University (<http://cstl.syr.edu/fipse/pretest/self.html> and <http://cstl.syr.edu/fipse/pretests/econtest/econ3b.html>).

12.  $a^2(a^3) =$
13.  $\sqrt{81} =$
14. 50 is what proportion of 200?
15. What is 12% of 85?
16. 20% of 15 is what % of 24?
17. What is 12.4 increased by 75%?
18. The rate of inflation in 1994 was .026. How would this be expressed as a percent?
19. A student earned \$2000 working at a summer job before entering college. The following summer, the student earned \$2525. What percent increase did the student's earning grow from one summer to the next?
20. Tamara just received an 8% pay raise, which amounts to a \$2,000 increase in her annual salary. Martin was earning \$23,000 a year and just heard that as of next week, he will be making \$24,500 a year. How much was Tamara making before her raise? Who received a greater percent increase in annual salary, Martin or Tamara?
21. In the Big Bucks Lottery, the chance of winning a \$10 prize is 1%. How many people do you expect would win a \$10 prize if 1000 people each buy a single ticket to Big Bucks?
22. Solve for x:  $3x + 2 = 17$
23. Solve for x:  $2(x + 7) = 3(3 - x) + 8$
24. Solve for x:  $ax = b(x + d)$

25. Solve for x:  $\frac{1}{3+x} = \frac{1}{3x-1}$

26. Solve for x:  $y = 2x + 3$

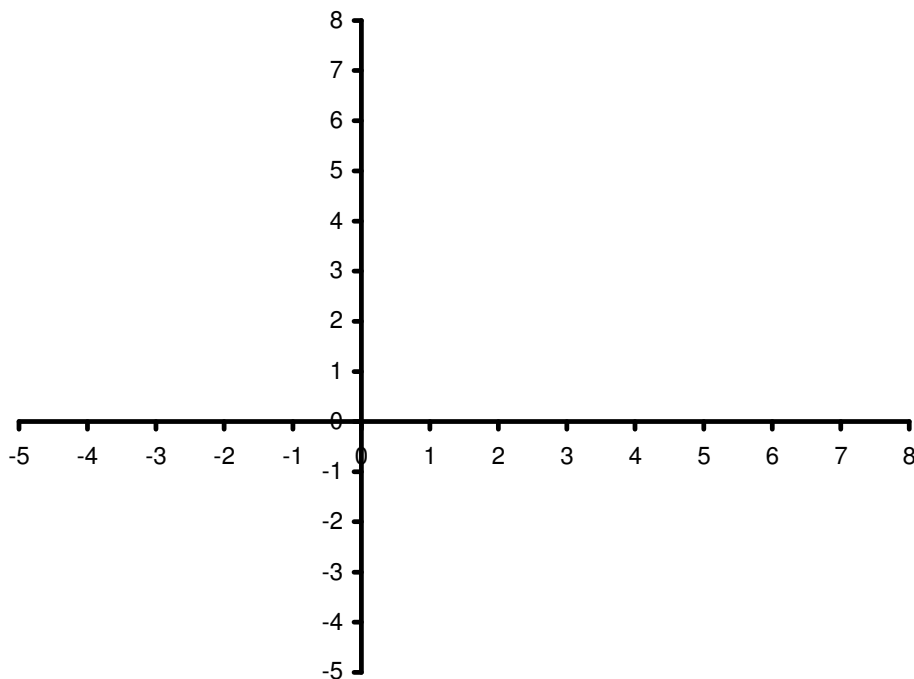
27. If  $x = -1$ , then  $-(x^4 + x^3 + x^2 + x) =$

28. Linda purchased X items from a company for \$8 each. The postage and handling charges for the first item is \$3, plus \$1 for each additional item. Write an algebraic expression which represents the total dollar amount of Linda's purchase, including postage and handling of X items.

29. The value of a bag of coins consisting of nickels, dimes, and quarters is \$1.90. There are half as many quarters as nickels, and three more nickels than dimes. Write an algebraic expression representing this information, and solve for how many coins of each kind are in the bag.

30. Plot and label the following points in the axes given below:

- (a) (2, 3)      (b) (3, 2)      (c) (4.5, -2)      (d) (-3, -4)      (e) (-3, 4)  
(f) (0, 7)      (g) (-3, 0)



31. What is the slope of the line with the equation  $2y - x = 3$ ?

32. What is the equation of the line through the points  $(1, 5)$  and  $(3, -3)$ ?

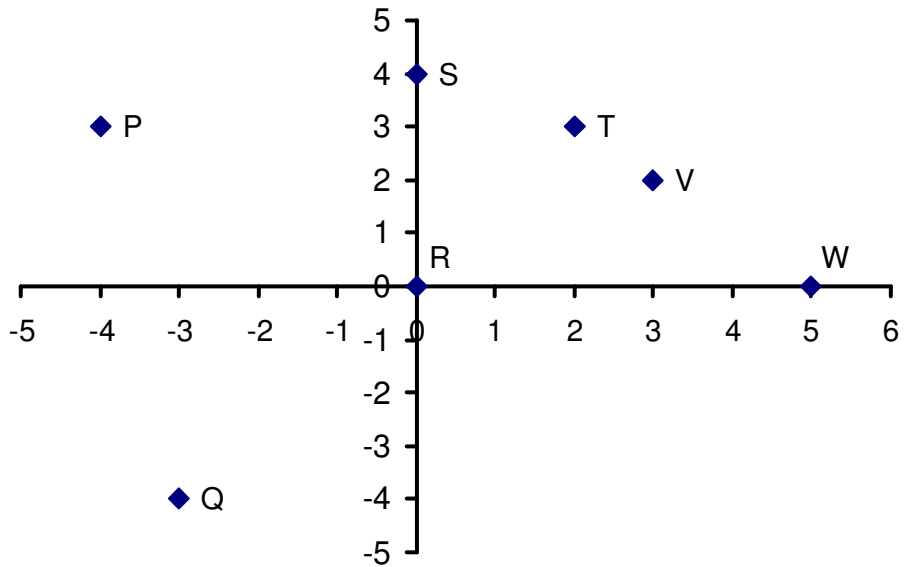
33. Point A is  $(4, 1)$  and Point B is  $(2, 5)$ . What is the slope of the line that connects these two points?

Use the graph below for questions 34– 36

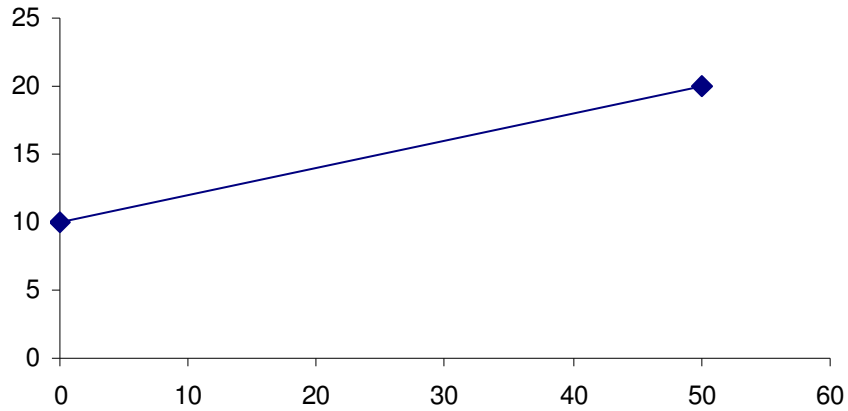
34. Which letter represents the point  $(3, 2)$ ?

35. Where is the origin?

36. Which point is on the y axis?

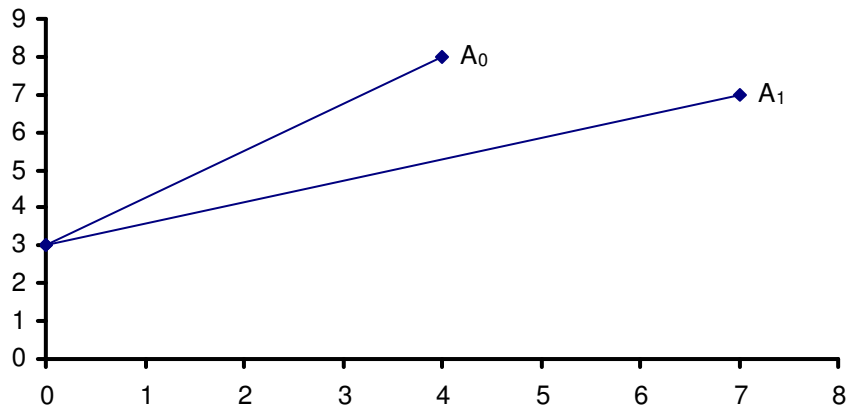


37. What is the equation of the line shown in the graph below?

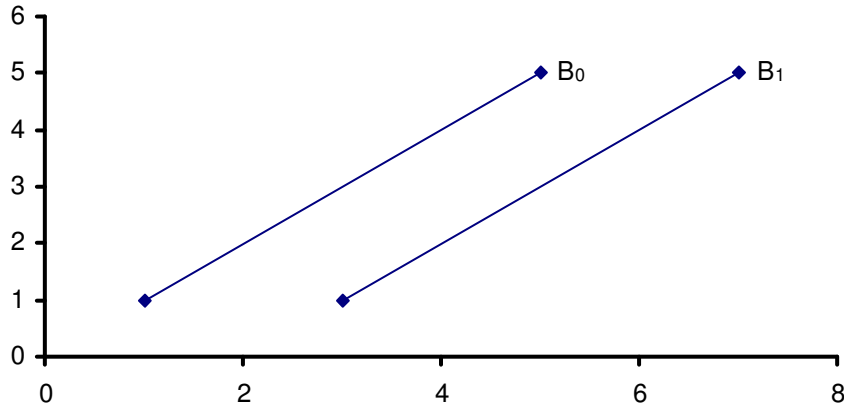


38. Using the graph in question #37 is the slope of the line positive, negative, infinite, or zero?

39. In the graph below, the line A shifts from its initial position of  $A_0$  to its final position at  $A_1$ . If initially the equation of line  $A_0$  is  $y = mx + b$ , what must have changed in this equation for this sort of shift to occur,  $y$ ,  $m$ ,  $x$ , or  $b$ ?



40. In the graph below, the line B shifts from its initial position of  $B_0$  to its final position at  $B_1$ . If initially the equation of line  $B_0$  is  $y = mx + b$ , what must have changed in this equation for this sort of shift to occur,  $y$ ,  $m$ ,  $x$ , or  $b$ ?



41.  $X$  is defined as the series “5, 6, 7, 8.” Solve:  $\sum x^2 =$
42. Last semester, Laura took an urban studies course where she had three exams – two midterms and a final. Each midterm counted for 25% of her final course grade. The final exam was worth 50%. She received a 90 on her first midterm, a 94 on her second midterm, and a 77 on her final exam. What is her final course average?