

Name _____

Test 4
Intermediate
Algebra

Mike Huff

Fall 2003

Deadline: 12/9/03

Tools: Any calculator and scrap paper.

Name _____ *Intermediate Algebra Test 4 Mike Huff*

Show all work on the test paper for full credit. All questions are worth 5 points each.

1. Find the following values of the polynomial function $p(x) = 3 - 2x - x^2$:

a) $p(0)$

b) $p(-3)$

2. Find the center and radius of the circle defined by the equation:

$$x^2 + y^2 + 6x - 4y + 9 = 0$$

3. Given the two points $(-1, -1)$ and $(3, 2)$, find the following:

a) The midpoint.

b) The distance between the two points.

4. Solve by completing the square:

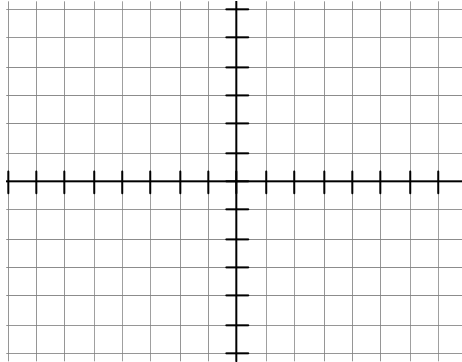
$$x^2 + 6x + 5 = 0$$

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5. Solve using the quadratic formula: $x^2 - 6x + 17 = 0$

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6. Find the discriminant of the equation $x^2 - 8x + 16 = 0$. How many real solutions does the equation have?

7. For the function $f(x) = x^2 + 6x + 5$, find the following:

- a) The axis of symmetry _____
- b) The vertex _____
- c) The y -intercept _____
- d) The x -intercept _____
- e) The graph



8. Is the ordered pair $\left(\frac{1}{2}, \frac{5}{3}\right)$ a solution of the system of linear equations

$$2x + 3y = 6$$

$$x + \frac{1}{2}y = \frac{5}{2}$$

9. Solve:

$$\begin{aligned}2x + y &= 11 \\x + 3y &= 18\end{aligned}$$

10. Solve:

$$\begin{aligned}4x + 2y &= -18 \\-2x - 5y &= 10\end{aligned}$$

11. Let $f(x) = x^2 - 7x - 40$. Find a so that $f(a) = 4$.

12. One day, while practicing for a competition, a team rowed an average of 25.6 mph with the current and 18.8 miles per hour against the current. Find the team's rowing speed in still water and the speed of the current.

13. The area of a square is 5 more than 4 times the length of a side. What is the length of a side of the square?

14. Solve and express the answer using interval notation: $3(2x - 7) < \frac{1}{2}(x - 9)$

15. Divide: $\frac{x-2}{x^2-4} \div \frac{x^2+4x+4}{x^2+6x+8}$

16. Solve: $\sqrt{3x+4} = x-2$

17. Simplify: $\sqrt[3]{81x^7y^{21}z^{50}}$

18. Simplify: $2\sqrt{45} - 11\sqrt{20}$

19. The number of households with personal computers (PC's) in the United States is growing. In 1995 there were 33.2 million households with PC's. In 2000 the number had grown to 52.8 million.

a) Find a linear function that gives the number of PC's in the United States as a function of the number of years (x) since 1995.

b) Use the function to predict the number of households with PC's in 2005.

20. Kim throws a ball off the roof of her ACC campus building. The distance in feet, d , of the ball from the ground at any time t can be found by the formula

$$d = -16t^2 + 64t + 35$$

a) Find the time the ball reaches its maximum height.

b) Find the maximum height.