

MATH-131 TEST 3 (Unit 3)

Sample

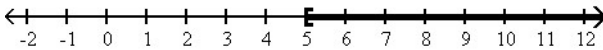
100 points

NAME: _____

Show all work clearly on this test paper. No credit will be given for solutions if work is not shown. No scratch paper. No calculators.

CIRCLE T FOR TRUE, F FOR FALSE. (2 points each)

T F (1) $3x^2 - 2x = 1$ is an example of a linear equation.

T F (2) $5 \leq x$ can be graphed as: 

T F (3) The solutions to $|x| = -5$ are $x = 5$ and $x = -5$.

T F (4) $(1, 3)$ is a solution to $3x - 5y < 1$

T F (5) $2x + 2 = x + 2$ has no solution.

(6) Solve. Work must be correct to get credit. Answer in interval notation. $6x^2 + 7x - 3 < 0$

Compute each of the following. (Note: These are not the "word problems" where you must set up an algebraic equation and solve, these are just computations using formulas you should be familiar with). Be sure to give the correct **units** in the answer. (2 points each)

(7) What is the perimeter of a rectangle with length 15 ft and width 4 ft?

(8) What is the area of a rectangle with length 15 ft and width 4 ft?

(9) Jay drove 450 miles at an average rate of 50 miles per hour. How long did the trip take?

(10) How much interest is earned if \$1200 is invested at 8% for one year?

(11) A chemical solution contains 5% salt. How much salt is in 11 gallons of this solution?

(12) Solve the following formula for t : $c = \frac{3t + 4}{t}$ (5 points)

(13) Solve each of the following.

(5 points each)

(a) $-9x + 7(2x - 4) = -19 - 4x$

(b) $4 - (3+2x) = 7(x+1) - 9x$

(c) $\frac{3x}{2} - 7 = \frac{4}{5} + x$

(d) $|4x+1| - 3 = 2$

(e) $3 - 3(x + 7) \leq 3x + 2(5x - 1)$

(f) $4y^2 - 13y = -3$

(g) $\frac{3r+6}{r} = 1 + \frac{6}{r}$

(h) $2a^3 - 50a = 0$

(i) $\frac{2x}{x-3} + \frac{4}{x+3} = \frac{-24}{x^2-9}$

(j) $|2x-7| < 8$

For each of the following word problems,

(6 points each)

Tell what your variable represents,

Show algebraic set-up and solution, and

Answer the question, including the correct units.

- (14) A cannonball is fired from a cliff that is 260 feet high with an initial speed of 128 ft/sec. The height s of the cannonball (in feet) as a function of time (in seconds) can be modeled by the function $s(t) = -16t^2 + 64t + 260$
- When will the height of the cannonball be 320 feet?
 - When will the cannonball hit the ground?

- (15) Suppose you ride your bike to the beach on a path that is 20 miles long. On the trip back you find that in the same amount of time as your ride out, you only make it 12 miles of the way home. Your average speed going to the beach is 4 miles per hour faster than the return trip. What was your average speed on the way to the beach.

- (16) A cashier has a total of a collection of five dollar bills and ten dollar bills. The number of fives is one less than twice the number of tens. The total value of the money is \$115. How many tens does she have?

- (17) Suppose you have \$6,000 to invest. You invest some of the money in an account earning 1% interest and the rest in an account earning 2% interest. If, at the end of the year you earned \$95, how much was invested in each account?