

I. Perform the indicated operations and simplify.

(3 pts.) 1. $(-3)^2 - 2^2$

(3 pts.) 2. $3 - 4 - 5$

(3 pts.) 3. $7 - [(9 - 7)^3 + 1]$

(4 pts.) 4. $\frac{25}{(8-3)^3} * 10 + 2$

II. Translate the following phrases into mathematical expressions and then simplify.

(4 pts.) 1. Five less than the sum of two and a number.

original translation:

simplified answer:

(4 pts.) 2. The sum of negative one-third of a number and twice the number.

original translation:

simplified answer:

III. Indicate true or false by writing true or false.

(3 pts.) _____ 1.) -7 is a solution to $(x - 3)^2 = x^2 - 6x + 9$

(3 pts.) _____ 2.) 4 is a solution to $3 - x = -[x - (x + 1)]$

IV. (5 pts.) If $7a = 3a - 8$ evaluate $a^3 + a^2 - a$

V. Solve the following equations for the variable.

(5 pts.) 1. $\frac{1}{3} + x = \frac{3}{4}$

(5 pts.) 2. $-\frac{2}{5}a = \frac{4}{5}$

(5 pts.) 3. $6y + 3 = 45$

(5 pts.) 4. $-17x + 12 + 5x = 36$

(5 pts.) 5. $6n - 5 = 4n + 101$

(5 pts.) 6. $7x - 2(7 + x) = 31$

(5 pts.) 7. $-2[4 - (3b + 2)] = 5 - 2(3b + 6)$

VI Translate the following sentences into equations and solve.

(4 pts.) 1. The product of a number and twelve is two hundred twenty eight. Find the number.

(4 pts.) 2. Four more than half a number is the number. Find the number.

(4 pts.) 3. The sum of two numbers is twenty. Three times the larger number is ten less than seven times the smaller number. Find the two numbers.

VII Application Problems

(5 pts.) 1. The velocity v of a projectile t seconds after it is shot straight up into the air is given by $v = -32t + v_0$ where v_0 is its initial velocity. Find the velocity of a baseball 1.5 seconds after it is thrown straight up with an initial velocity of 60 feet per second.

(5 pts.) 2. A clothing store uses a markup rate of $\frac{2}{5}$. Find the selling price of a jacket that costs \$25. Use the equation $S = C + RC$, where S is the selling price, C is the cost, and R is the markup rate.

(5 pts.) 3. The total purchase price, including finance charges, for a boat was \$2892. A down payment of \$300 was made. The remainder was paid in 24 equal monthly payments. Find the monthly payments.

(5 pts.) 4. A pole 20ft. long is cut into two pieces. Twice the length of the shorter piece is 4 feet more than the length of the longer piece. Find the length of the shorter piece.