MATH114 COLLEGE MATH & STATISTICS 100pts SAMPLE TEST 1 p.1 INSTRUCTOR: CARLA MORRIS NAME:_____

The best 20 of these 21 problems will count 5 points each

1. Solve $7x - 5 = 4x + 1$

2. Solve $\frac{3x}{3} + x = \frac{x+5}{4} + 4$

3. $\frac{x+1}{2x-1} = \frac{x+9}{2x+3}$

4. The sum of three consecutive integers is 693. Find the integers.

5. Your weekly paycheck is 10% more than your coworker's. Together the two checks total $525. Find the amount of each check.

6. Solve I = Prt for t.

7. Factor $x^4 - 16$

8. Factor $2x^3 - 16$

9. Factor by grouping $2ax + 2ay + bx + by$

10. Solve the quadratic $x^2 - 11x + 30 = 0$ by factoring

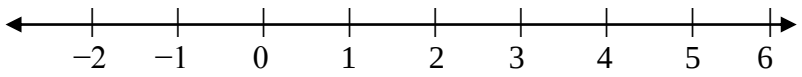
**In problems 11 & 12 use the quadratic formula to solve** $\mathbf{x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}}$

11. $x^2 - 7x - 18 = 0$

12. $3x^2 - 11x - 20 = 0$

13. One number is two more than another positive number. Their product is 63. Find the numbers.

14. Solve $7x + 3 < 4x + 6$ and show the solution on the number line provided.

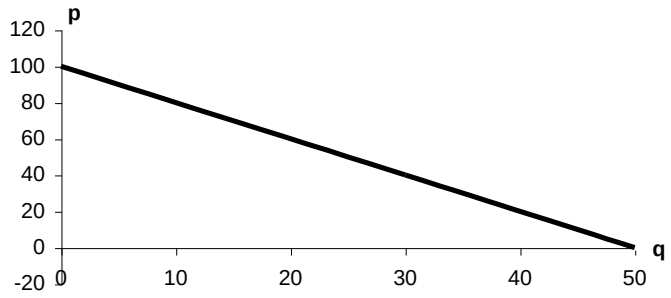



15. Solve $|4x - 3| \leq 9$ and give the solution in interval notation.

16. Graph $y = 3x + 1$

17. Determine the slope of the line passing through (1, 5) and (4, 14)

18. Determine the quantity demanded when the price is 40 in the graph below (mark the graph).




19. Are the lines $y = 2x - 5$ and $2x - y = 12$ parallel, perpendicular or neither? Show work to support your answer.

20. Water freezes at $0^\circ C$ or $32^\circ F$ and boils at $100^\circ C$ or $212^\circ F$. Find a linear equation that converts Celsius temperatures to Fahrenheit temperatures.

21. A new machine costs \$100,000 and has a salvage value of \$10,000 after six years. Assume depreciation is linear and determine the model that gives the machine's value at time t ($0 \le t \le 6$).

Formulas

$y - y_1 = m(x - x_1)$ $y = mx + b$ $m = \frac{y_2 - y_1}{x_2 - x_1}$

$x^3 - a^3 = (x - a)(x^2 + ax + a^2)$

$x^3 + a^3 = (x + a)(x^2 - ax + a^2)$