MAT094 Practice Final Exam   Name_____

SHOW ALL WORK on your work papers. Write your answers on the lines or graph grids provided.

Simplify.

1) $3 + 5(-3)^2 - 16 \div 4$ 1) _____

2) $|-4 + (-4)| + |-7 + 4|$ 2) _____

3) (a) $\dfrac{8}{-8}$ _____   3) _____

   (b) $\dfrac{0}{8}$ _____

   (c) $\dfrac{8}{0}$ _____

4) $7(-4)^2 - 3(-2)^2$ 4) _____

5) $-2(9r + 8) + 8(3r + 7)$ 5) _____

6) Evaluate the expression for the given value.   6) _____
   $\dfrac{8x - 5}{7x}$; $x = -7$

Solve the equations.

7) $8y + 10 = -1 + 4y$ 7) _____

8) $-(7y + 1) - (-6y - 3) = -4$ 8) _____

9) If a spring stretches 0.9 m when a 8-kg weight is attached to it, how much will   9) _____
   it stretch when a 28-kg weight is attached to it?

10) The sum of three-fifths of a number and eight is two. Find the number.   10) _____

11) In Massachusetts speeding fines are determined by the formula   11) _____
    F = 10(x-65) + 50,   where F is the cost in dollars of the fine if a person is
    caught driving x miles her hour.
    If the fine comes to $250, how fast was that person speeding?
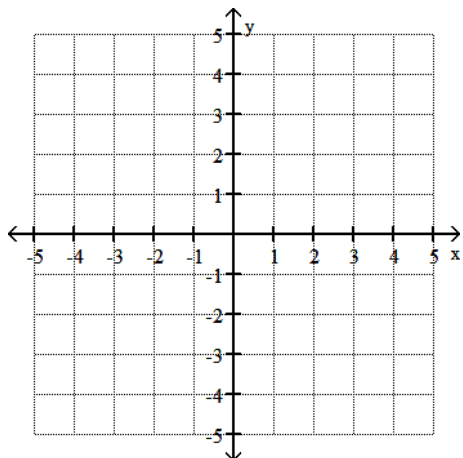
12) Solve the inequality, then graph the solution.   12) _____

    $-6(5y + 6) < -36y - 42$

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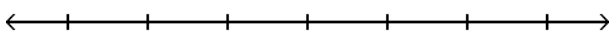
13) Find the intercepts for the graph of the equation. Draw the graph.   13) _____

    x + y = 5

14) Write an equation of the line with the given slope and y-intercept.   14) _____

    $m = \dfrac{8}{3}$; (0, -4)
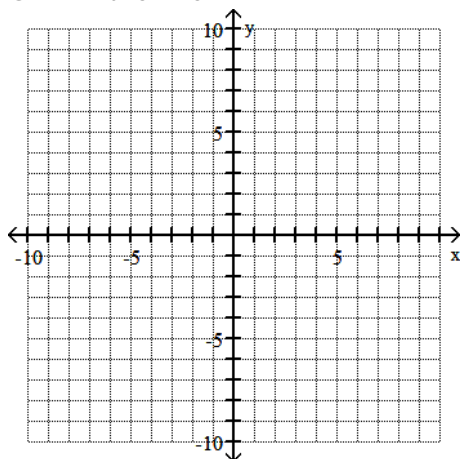
15) Write the slope-intercept form of the equation for the line passing through the   15) _____
    given pair of points.
    (-9, 7) and (-7, 4)

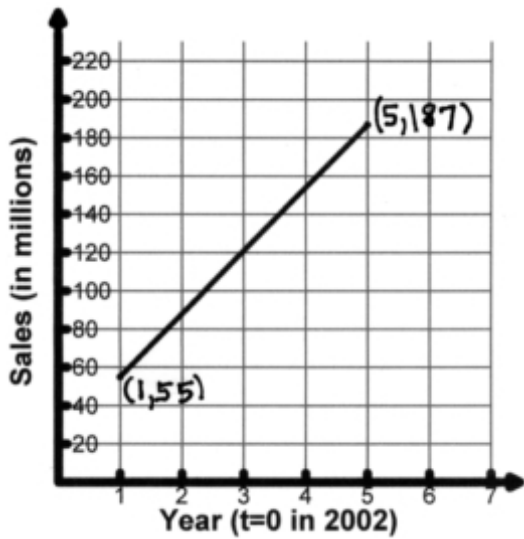16) Write the equation of the line having slope $= \dfrac{3}{4}$, and passing through (-4, -2).   16) _____
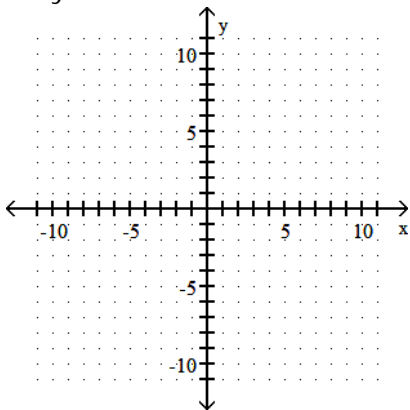
    GRAPH the line.

17) The graph from InfoSync World shows the projected camera-phone sales worldwide through 2008.
Find the slope of the line.
State the meaning of the slope in the context of this problem.

17) _____

_____

18) Graph the linear inequality.
$x - y > -5$

18) _____

19) Decide whether or not the ordered pair (6, -2) is a solution of the system.
$3x = -20 - y$
$2x = -18 - 3y$

19) _____
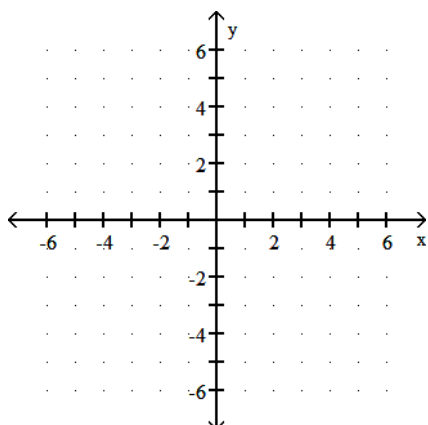
20) Solve by substitution.
$x + 7y = 45$
$2x + 7y = 41$

20) _____

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21) Solve the system by graphing.
    $2x + y = 1$
    $2x + y = 3$

21) _____

22) Ron and Kathy are ticket-sellers at their class play, Ron handling student tickets that sell for $3.00 each and Kathy selling adult tickets for $5.50 each. If their total income for 24 tickets was $87, how many did Ron sell?

22) _____

Perform the indicated operations.

23) $(-1 + x^2 - 6x) + (-5x - 6 + x^3) + (-4x - 2 + 6x^3)$

23) _____

24) $(8n^7 - 19n^5 + 5) - (-11n^5 + 5n^7 - 10)$

24) _____

25) $(3p^3s^3)^4 \ (s^2)$

25) _____

26) $(3x + 10)(3x - 10)$

26) _____

27) $\dfrac{21x^5 - 56x^4 + 28x^8}{7x^4} =$

27) _____

28) $\dfrac{6m^2 + 47m - 63}{m + 9} =$

28) _____

29) Simplify and write your answer with positive exponents only: $\dfrac{20x^3y^2z}{48x^4yz^2}$

29) _____

30) Write the number without exponents.   30) _____
   4.9217×10^6

31) Write the number in scientific notation.   31) _____
   .000496

Factor completely. If unfactorable, indicate that the polynomial is prime.
   32) $x^2 - x - 6$ 32) _____

   33) $25k^2 - 9m^2$ 33) _____

   34) $10a^3 + 8a^2b - 15ab^2 - 12b^3$ 34) _____

   35) $x^7 + 11x^6 + 18x^5$ 35) _____

Find all solutions.
   36) $x^2 + 10x - 24 = 0$ 36) _____

   37) $12m^2 - 5m = 0$ 37) _____

38) The length of a rectangular frame is 3 cm more than the width. The area   38) _____
   inside the frame is 40 square cm. Find the width of the frame.

39) The diagram below shows a rope connecting the top of a pole to the ground.   39) _____
   The rope is 23 yd long and touches the ground 17 yd from the pole. How tall is
   the pole? Round approximations to the nearest tenth.

   ?   23 yd

   17 yd
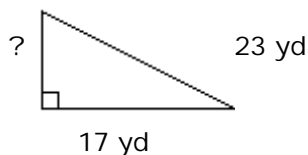
40) The width of a rectangle is 6 kilometers less than twice its length. If its area is   40) _____
   216 square kilometers, find the dimensions of the rectangle.

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