Math 118 Practice for the Math 118 Exit Exam Name

This draft should not be shown to students before the year 2010. Draft May 29, 2009

No calculators. No partial credit. For credit you must show work and have the correct final answer. For multiple choice shade in the bubble on the answer sheet. For open-ended questions write final answers in the space provided on the answer sheet.

1. Evaluate $rs - r^2$ at $r = -5$ and $s = -3$.

   (A) -10

   (B) 10

   (C) -40

   (D) 40

   (E) none of the above

2. $(3x^{-4}y^{6})^{-2} =$

   (A) $-9x^{8}y{-}12$

   (B) $3x^{-4}y^{-12}$

   (C) $\frac{x^{8}}{9y^{12}}$

   (D) $\frac{3}{x^{4}y^{12}}$

   (E) none of the above

3. Solve for x: $y - 5 = \frac{3}{4}(x - 8)$.

   (A) $x = \frac{4}{3}y + 3$

   (B) $x = \frac{4}{3}y - 12$

   (C) $x = 4y - 12$

   (D) $x = 4y - 20$

   (E) none of the above

4. Solve for L: $P = 2L + 2W$

   (A) $L = \frac{P}{2} - 2W$

   (B) $L = \frac{P - 2W}{2}$

   (C) $L = P - 2W$

   (D) $L = P - W$

   (E) none of the above

5. Solve for x: $2 - x \leq 9$.

(A) $x \leq -7$

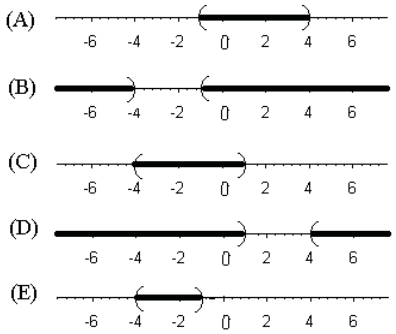
(B) $x \leq 7$

(C) $x \geq 7$

(D) $x \geq -7$

(E) none of the above

6. Select the best graph or portion of graph of the solution of: $|2x - 3| < 5$.



7. Which number is *not* a solution to $5 - x \geq 8$?

(A) -8

(B) -5

(C) -4

(D) -3

(E) -1

8. Which ordered (x, y) pair is *not* a solution to $2x - 3y = 12$?

(A) $(0, -4)$

(B) $(2, -3)$

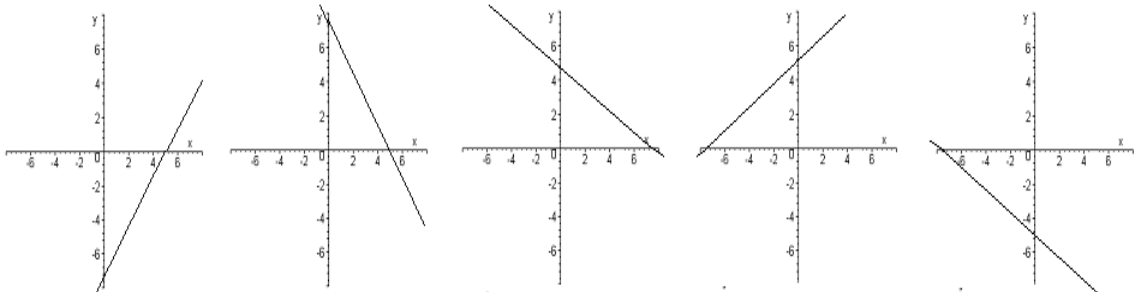
(C) $(3, -2)$

(D) $(6, 0)$

(E) $(15, 6)$

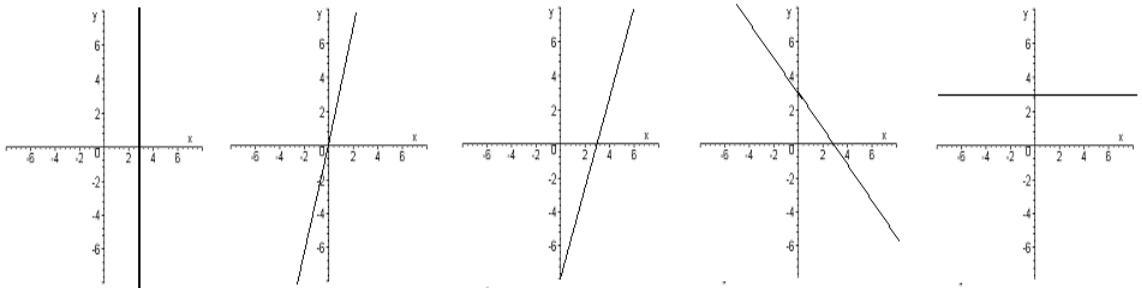
9. Graph $3x - 2y = 15$.

(A) (B) (C) (D) (E)



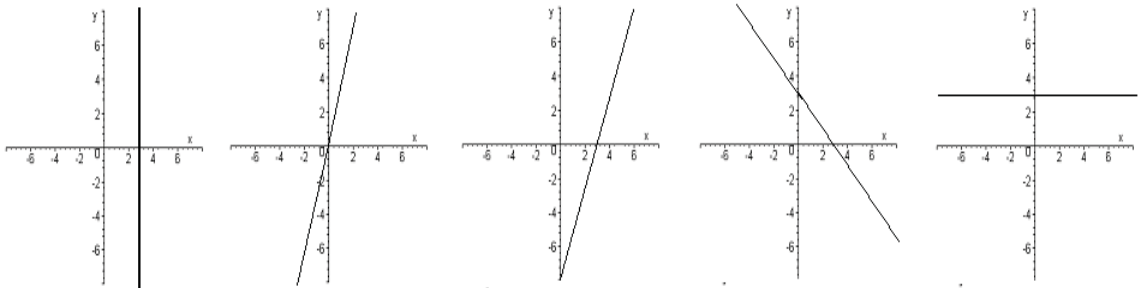
10. Graph $3x - y = 0$.

(A) (B) (C) (D) (E)



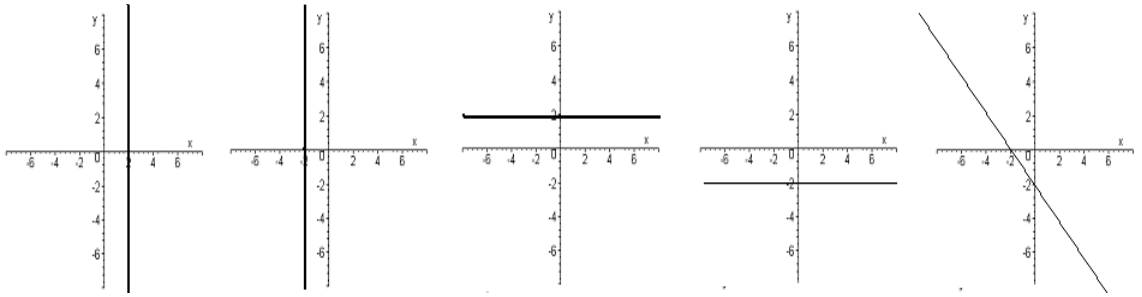
11. Graph $y = 3$.

(A) (B) (C) (D) (E)



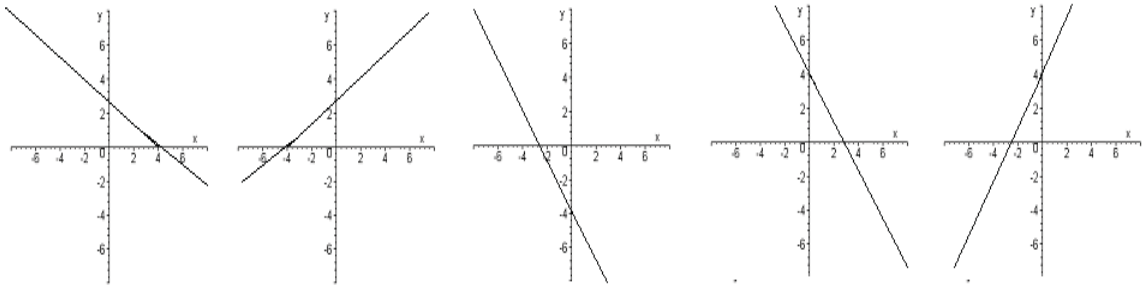
12. Graph $x = -2$.

(A) (B) (C) (D) (E)



13. Graph the line with slope $\frac{2}{3}$ through the point $(1, -2)$.

(A) (B) (C) (D) (E)



14. Select an equation for a line perpendicular to $3x - 4y = 24$.

(A) $y = -\frac{4}{3}x + 6$

(B) $y = \frac{4}{3}x - 6$

(C) $y = \frac{3}{4}x - 6$

(D) $y = -\frac{3}{4}x + 6$
(E) none of the above

15. Find the x-coordinate of a solution to the system:
$\begin{cases} 2x + 5y = 20 \\ -3x + 2y = 12 \end{cases}$

(A) $-\frac{2}{19}$

(B) $-\frac{5}{19}$

(C) $-\frac{20}{19}$

(D) $\frac{-84}{19}$

(E) none of the above

16. Find the x-coordinate of a solution to the system:
$\begin{cases} 2x - 4y = 12 \\ -3x + 6y = 18 \end{cases}$

(A) -3
(B) 0
(C) 6
(D) 72
(E) none of the above

17. Find the x-coordinate of a solution to the system:
$\begin{cases} x - 2y = 10 \\ -3x + 6y = -30 \end{cases}$

(A) $-\frac{5}{6}$

(B) $-\frac{1}{6}$

(C) $\frac{1}{6}$

(D) $\frac{5}{6}$

(E) none of the above

18. A news stand operator pays \$300 rent and 38 cents for each newspaper sold. S/he sells the newspapers for 50 cents each. How many newspapers does s/he need to sell in order to break even?

(A) 25000
(B) 2500
(C) 250
(D) 25
(E) none of the above

19. How much would 9 pounds of apples cost if 6 pounds of apples cost \$4?

(A) \$4.50
(B) \$5
(C) \$5.50
(D) \$6
(E) none of the above

20. Three cartons of eggs and four loaves of bread cost \$17.75. Four cartons of eggs and three loaves of bread cost \$15.50. How much does one carton of eggs cost?

(A) \$1.25
(B) \$1.50
(C) \$1.75
(D) \$2.00
(E) none of the above

21. A bag contains dimes and quarters, a total of 40 coins. The value of the coins is \$7.15. How many dimes are there?

(A) 15
(B) 16
(C) 17
(D) 18
(E) none of the above

22. A chemist needs to mix a 10% acid solution with a 50% acid solution to make 200 milliliters of a 40% acid solution. How many milliliters of the 10% acid solution should be used?

(A) 150
(B) 120
(C) 90
(D) 50
(E) none of the above

23. $(5a^2b^4)(-3ab^5c^2) =$

(A) $-15a^2b^{20}c^2$

(B) $-15a^3b^9c^2$

(C) abc^2

(D) $2a^2b^9c^2$

(E) none of the above

24. $(2x^2 - 6x - 7)$
$-(5x^3 - 8x + 6) =$

(A) $-5x^3 + 2x^2 - 14x - 1$

(B) $-3x^2 - 14x - 1$

(C) $-5x^3 + 2x^2 + 2x - 1$

(D) $3x^2 - 14x - 1$

(E) none of the above

25. $(3x^2 - 6x - 11)$
$+(2x^2 - 8x + 9) =$

(A) $5x^2 - 14x - 2$

(B) $5x^4 - 14x^2 - 2$

(C) $6x^4 + 48x^2 - 99$

(D) $6x^2 + 48x - 99$

(E) none of the above

26. $4x^2y(6x - 2y + 1) =$

(A) $10x^3y - 2y + 1$

(B) $24x^3y - 2y + 1$

(C) $24x^3y - 8x^2y^2 + 4x^2y$

(D) $10x^3y + 2x^2y^2 + 5x^2y$

(E) none of the above

27. $(2x - 6y) - (5x - y) =$

(A) $3x - 7y$

(B) $-3x - 7y$

(C) $3x - 5y$

(D) $-3x - 5y$

(E) none of the above

28. $(2x - 7)(3x - 5) =$

(A) $6x^2 + 35$

(B) $5x - 12$

(C) $-15x + 35$

(D) $6x^2 - 31x - 35$

(E) none of the above

29. $(3x - 8)(4x^2 - 7x + 1) =$

(A) $12x^3 - 53x^2 + 59x - 8$

(B) $12x^2 - 56x - 8$

(C) $12x^3 + 53x^2 + 59x - 8$

(D) $4x^2 - 4x - 7$

(E) none of the above

30. $(x^2 - 5x + 7) \div (x + 4) =$

(A) $x - 1 + \frac{3}{x+4}$

(B) $x - 1 + \frac{11}{x+4}$

(C) $x - 9 - \frac{29}{x+4}$

(D) $x - 9 + \frac{43}{x+4}$

(E) none of the above

31. $\dfrac{6x^3 - 17x^2 + 26x + 17}{2x - 3} =$

(A) $3x^2 - 13x + 22 + \frac{x+83}{2x-3}$

(B) $3x^2 - 13x + 22 + \frac{x-49}{2x-3}$

(C) $3x^2 - 4x + 7 + \frac{40}{2x-3}$

(D) $3x^2 - 4x + 7 - \frac{2}{2x-3}$

(E) none of the above

32. $\dfrac{3}{4x} + \dfrac{5}{6x} =$

(A) $\dfrac{5}{8x}$ (B) $\dfrac{19}{12x}$

(C) $\dfrac{2}{3x}$ (D) $\dfrac{4}{5x}$

(E) none of the above

33. $\dfrac{6}{x+3} - \dfrac{4}{x} =$

(A) $\dfrac{2x-4}{x(x+1)}$ (B) $\dfrac{2}{x+3}$

(C) $\dfrac{2}{x(x+3)}$ (D) $\dfrac{2x-12}{x(x+3)}$

(E) none of the above

34. $\dfrac{x^2 - 4}{2x^2 - 5x - 12} \div \dfrac{x^2 + 10x + 24}{4x^2 - 9} =$

(A) $\dfrac{2x-1}{x+2}$ (B) $\dfrac{2x-3}{x+6}$

(C) $\dfrac{(x+2)(x-2)(2x-3)}{(x-4)(x+4)(x+6)}$ (D) $\dfrac{2x-3}{(x+4)(x+6)}$

(E) none of the above

35. $\dfrac{x^2-4y^2}{x^2-xy-2y^2}\cdot\dfrac{x^2-3xy-4y^2}{x^2-6xy-16y^2}=$

(A) $\dfrac{x-4y}{x-8y}$ (B) $\dfrac{x-y}{x-2y}$ (C) $\dfrac{2}{2xy+4}$ (D) $\dfrac{1}{4}$

(E) none of the above

36. $\dfrac{\dfrac{1}{2y}-\dfrac{3}{x}}{\dfrac{1}{y}-\dfrac{2}{x}}=$

(A) $\dfrac{x-3y}{2x-2y}$ (B) $\dfrac{x-3y}{x-2y}$

(C) $\dfrac{x-3y}{x-4y}$ (D) $\dfrac{x-6y}{x-4y}$

(E) none of the above

37. $\dfrac{x^2+x-6}{x^3+3x^2-4x-12}=$

(A) $\dfrac{1}{x-2}$

(B) $\dfrac{1}{x+2}$

(C) $\dfrac{1}{x+3}$

(D) $\dfrac{x-6}{3x^2-4x-12}$

(E) none of the above

38. $\dfrac{15x^{-5}y^6x^{-3}}{25x^2y^{-4}}=$

(A) $\dfrac{3y^{10}}{5x^{10}}$ (B) $\dfrac{3x^{10}}{5y^{10}}$

(C) $\dfrac{3x^6}{5y^2}$ (D) $\dfrac{3y^2}{5x^6}$

(E) none of the above

39. $(64x^{12}y^6)^{1/6}=$

(A) $64x^2y$ (B) $\dfrac{32x^{12}y^6}{3}$

(C) $16x^{12}y^6$ (D) $4x^2y$

(E) none of the above

40. $\sqrt{50x^{16}y^9} =$

(A) $7x^4y^3$

(B) $7x^8y^4\sqrt{y}$

(C) $25x^8y^4\sqrt{y}$

(D) $25x^4y^3$

(E) none of the above

41. $\sqrt{8x} + \sqrt{50x} =$

(A) $7\sqrt{2x}$

(B) $\sqrt{10x}$

(C) $\sqrt{29x}$

(D) $\sqrt{58x}$

(E) none of the above

42. $\dfrac{5}{2-\sqrt{3}} =$

(A) $\dfrac{5(2+\sqrt{3})}{7}$

(B) $\dfrac{5(2-\sqrt{3})}{7}$

(C) $5(2-\sqrt{3})$

(D) $5(2+\sqrt{3})$

(E) none of the above

43. If $x^2 + 9x = 0$ then x can equal

(A) 0

(B) 1

(C) 2

(D) 3

(E) none of the above

44. $15x^3y^2 - 20x^4yz^6 + 25x^6y^3z^4 =$

(A) $5x^3yz^4(3y - 4xz^2 + 5x^3y^2)$ (B) $5x^3y(3y - 4xz^6 + 5x^3y^2z^4)$

(C) $5x^3y^2(-4xz^6 + 5x^3yz^4)$ (D) $10x^{13}y^5z^{10}$

(E) none of the above

45. If $(x-2)^2 = 16$
then x can equal

(A) 0

(B) -1

(C) -2

(D) -3

(E) none of the above

46. If $x^2 = 2x + 6$
then x can equal

(A) $2 - \sqrt{28}$

(B) $1 - \sqrt{28}$

(C) $1 - 2\sqrt{7}$

(D) $1 - \sqrt{7}$

(E) none of the above

47. If $x^2 + 25 = 6x$
then x can equal

(A) -7

(B) -1

(C) 1

(D) 7

(E) none of the above

48. If $2x^2 + 7x = 4$
then x can equal

(A) $-\frac{1}{2}$

(B) $\frac{1}{2}$

(C) 4

(D) 7

(E) none of the above

The following questions are open-ended. About 20% of questions on the actual exam will be open-ended. Put final answers on answer sheet provided. No partial credit is given for incorrect answers. For credit you must show the work and have the correct final answer.

49. Evaluate $\dfrac{5(F-32)}{9}$ at $F = 14$.

50. Solve for x: $2x - 8 = 3x + 4(x - 2)$.

51. Solve for x: $\dfrac{5}{6} - \dfrac{3}{2x} = \dfrac{3}{4}$.

52. Solve for x: $|3x - 2| = 6$.

53. Solve for x: $x^2 + 18 = 11x$.

54. Solve for x: $x = 2 + \sqrt{19 - 2x}$

55. Solve for x: $\sqrt{x - 2} = 7$

56. Find the slope of the line through the points $(-2, 5)$ and $(4, 1)$.

57. Find the slope-intercept form of the equation of the line with x-intercept $3, 0)$ and y-intercept $(0, 5)$.

58. Factor completely: $x^2 - 13xy - 90y^2$

59. Factor completely: $2x^3 + 5x^2 - 8x - 20$

60. Factor completely: $16a^4 - 1$

61. Factor completely: $x^3 - 8$

62. Factor completely: $36r^2 - 60rs + 25s^2$