Math 00100 Final Exam Review

Name_____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

1) Solve. $3x^2 - 18x + 24 = 0$ 1) _____

2) Determine whether the graphs of the equations are parallel lines, perpendicular lines, or neither. 2) _____
$y = 4x - 4$
$16x + 4y = 6$

3) Simplify. $[4(x - 4) - 3] + [8(x - 1) + 8]$ 3) _____

4) Multiply. $(5a + 12c)(5a - 12c)$ 4) _____

5) Factor completely. $x^2 + 3xy - 10y^2$ 5) _____

6) Solve. $\frac{x}{3} - \frac{x}{8} = 6$ 6) _____

7) Write an equation in slope–intercept form of a line through the given point $(0, 2)$; and with the given slope of $m = \frac{6}{5}$. 7) _____

8) Factor completely. $4x^2 - 4x - 24$ 8) _____

9) Graph. $x + y = -4$ 9) _____

10) Identify the degree of each term and the degree of the polynomial. 10) _____
$3x - 2x^2 + 7 - 4x^3$

11) Multiply. $(3p - 1)(9p^2 + 3p + 1)$ 11) _____

12) Factor completely. $9x^2 + 64$ 12) _____

13) Chuck and Dana agree to meet in Chicago for the weekend. Chuck travels 300 miles in the same time that Dana travels 270 miles. If Chuck's rate of travel is 5 mph more than Dana's, and they travel the same length of time, at what speed does Chuck travel? 13) _____

14) Solve. $9x - (6x - 1) = 2$ 14) _____

15) Frank can type a report in 3 hours and James takes 7 hours. How long will it take the two of them typing together? 15) _____

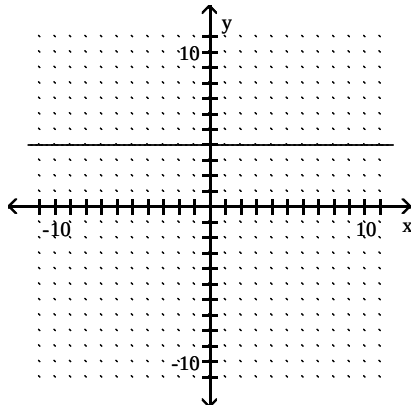
16) Subtract. $-\frac{4}{5} - \left(-\frac{7}{10}\right)$ 16) _____

17) Simplify. $3 + (-19)(-10) + (-15)$ 17) _____

18) Solve the inequality. $7a - 11 \geq 8a - 19$ 18) _____

19) The perimeter of a rectangle is 28 cm. One side is 8 cm longer than the other side. Find the lengths of the sides. 19) _____

20) Write an equation for the graph. 20) _____



21) An airplane travels 600 miles against the wind in 5 hours, and makes the return trip with the same wind in 2 hours. Find the speed of the wind. 21) _____

22) Evaluate $2x^3 + 2x^2 - 25$ for $x = -2$ 22) _____

23) Simplify. $\dfrac{\frac{1}{a} + 1}{\frac{1}{a} - 1}$ 23) _____

24) Multiply and simplify. $x \cdot x^{-8}$ 24) _____

25) Find the x-intercepts for this equation. $y = x^2 - x - 42$ 25) _____

26) Simplify. $\dfrac{y^2 + 8y + 15}{y^2 + 13y + 40}$ 26) _____

27) Divide and simplify. $\dfrac{p^2}{p^{-7}}$ 27) _____

28) Factor completely. $x^3 - 3x^2 + 4x - 12$ 28) _____

29) Add. Simplify, if possible. $\dfrac{8}{7x - 9} + \dfrac{2}{9 - 7x}$ 29) _____

30) Divide and, if possible, simplify. $\dfrac{8p - 8}{p} \div \dfrac{10p - 10}{8p^2}$ 30) _____

31) Find the slope of the line going through the pair of points (3, –7), (6, 5). 31) _____

32) Subtract. $(8x^7 + 3x^9 + 9 - 7x^8) - (-2 - 5x^8 + 5x^9 + 6x^7)$ 32) _____

33) Find the LCM. $r^2 + 10r + 25$, $r^2 + 5r$ 33) _____

34) Solve. $\frac{x}{-2} = -5$ 34) _____

35) Find the slope and the y–intercept of the given line. $-2x + 8y = 8$ 35) _____

36) Multiply. $(x^2 - 8)^2$ 36) _____

37) Factor completely. $x^4 - 81$ 37) _____

38) Subtract. Simplify, if possible. $\frac{5x}{x^2 - 4} - \frac{x}{x - 2}$ 38) _____

39) Find all numbers for which the rational expression is not defined. 39) _____
$\frac{d - 6}{8 - d}$

40) Solve the formula for y. $x = \frac{w + y + z}{5}$ 40) _____

41) Simplify. Write your answer with only positive exponents. $\left(\frac{-3w^3}{x}\right)^2$ 41) _____

42) Dr. Taylor can see 12 patients in 3 hours. At this rate, how long would it take him to see 84 patients? 42) _____

43) The height of a triangle is 4 cm more than the length of the base. If the area of the triangle is 126 cm^2, find the height and length of the base. 43) _____

44) Graph the linear equation. $y = \frac{1}{4}x - 3$ 44) _____

45) Factor completely. $125s^3 + 1$ 45) _____

46) Factor completely. $6x^2 + 8x - 9x - 12$ 46) _____

47) Express the number in standard notation. 4.56×10^{-4} 47) _____

48) Divide. Write your answer in scientific notation. $\dfrac{8 \times 10^7}{4 \times 10^8}$ 48) _____

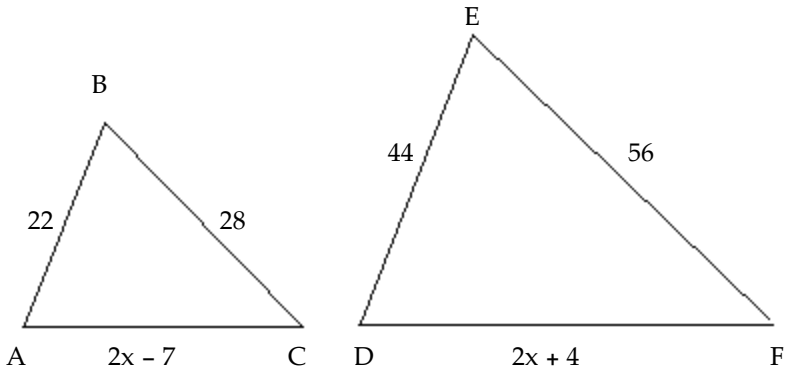
49) Divide. $\dfrac{x^2 + 13x + 32}{x + 9}$ 49) _____

50) Subtract. Simplify, if possible. $\dfrac{6}{x - 5} - \dfrac{8}{5 - x}$ 50) _____

51) Subtract. Simplify, if possible. $\dfrac{x}{x^2 - 16} - \dfrac{4}{x^2 + 5x + 4}$ 51) _____

Suppose the triangles shown are similar, with angle A = angle D, angle B = angle E, and angle C = angle F. Answer the question.

52) 52) _____



What is the value of x?

53) Solve the equation. $\dfrac{4}{x - 3} + \dfrac{9}{x} = \dfrac{-27}{x^2 - 3x}$ 53) _____

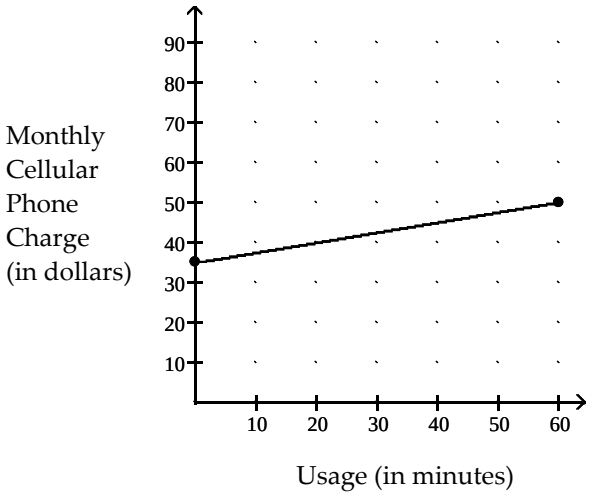
54) Solve the equation. $\dfrac{3}{3x} + \dfrac{1}{2x} = -\dfrac{1}{6}$ 54) _____

Solve the problem. Round your answer, as needed.

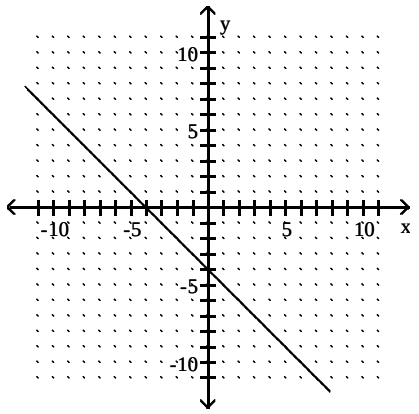
55) A deep sea diving bell is being lowered at a constant rate. After 8 minutes, the bell is at a depth of 400 ft. After 35 minutes the bell is at a depth of 1900 ft. What is the average rate of lowering per minute? (Round your answer to the nearest tenth, if necessary.) 55) _____

Find the average rate of change illustrated in the graph.

56) 56) _____



1) 2, 4
2) Neither
3) 12x – 19
4) $25a^2 - 144c^2$
5) (x + 5y)(x – 2y)
6) $\frac{144}{5}$
7) $y = \frac{6}{5}x + 2$
8) 4(x + 2)(x – 3)
9)



10) 1, 2, 0, 3; 3
11) $27p^3 - 1$
12) Prime
13) 50 mph
14) $\frac{1}{3}$
15) $\frac{21}{10}$ hr
16) $-\frac{1}{10}$
17) 178
18) {a| a ≤ 8}
19) 3 cm, 11 cm
20) y = 4
21) 90 mph
22) –33
23) $\frac{1 + a}{1 - a}$
24) $\frac{1}{x^7}$
25) (–6, 0), (7, 0)
26) $\frac{y + 3}{y + 8}$
27) p^9

28) $(x - 3)(x^2 + 4)$

29) $\frac{6}{7x - 9}$

30) $\frac{32p}{5}$

31) 4

32) $-2x^9 - 2x^8 + 2x^7 + 11$

33) $r(r + 5)^2$

34) 10

35) Slope $\frac{1}{4}$; y–intercept (0, 1)

36) $x^4 - 16x^2 + 64$

37) $(x^2 + 9)(x + 3)(x - 3)$

38) $\frac{-x^2 + 3x}{x^2 - 4}$

39) $d = 8$

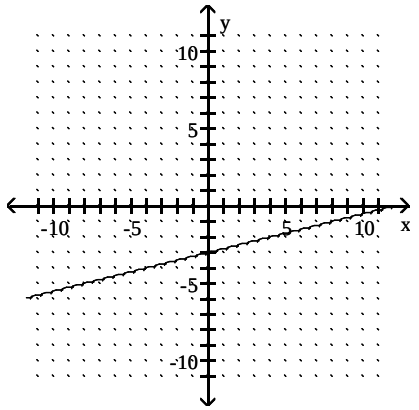
40) $y = 5x - w - z$

41) $\frac{9w^6}{x^2}$

42) 21 hours

43) height: 18 cm; base: 14 cm

44)



45) $(5s + 1)(25s^2 - 5s + 1)$

46) $(2x - 3)(3x + 4)$

47) 0.000456

48) 0.2

49) $x + 4 - \frac{4}{x + 9}$

50) $\frac{14}{x - 5}$

51) $\frac{x^2 - 3x + 16}{(x - 4)(x + 4)(x + 1)}$

52) 9

53) $\varnothing$

54) {–9}
55) 55.6 ft per minute
56) $.25 per minute