Miami Dade College –– North Campus
Mathematics Department
Review For Final Exam
MAT 1033

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

Factor completely.

1) $343y^3 - 1000$ 1) _____

2) $27c^3 + 125$ 2) _____

Find the slope–intercept form of the equation of a line with the given slope that passes through the given point.

3) Slope –5, through (–8, 6) 3) _____

4) Slope $\frac{2}{5}$, through (5, 2) 4) _____

Solve the literal equation for the specified variable.

5) $4x + 9y = 4$ for y 5) _____

Solve for the specified letter.

6) $R = nE - nr$, for n 6) _____

Simplify the expression.

7) $64^{-3/2}$ 7) _____

8) $32^{-4/5}$ 8) _____

Solve.

9) $3x^2 + 12x = -1$ 9) _____

Solve by using the quadratic formula.

10) $x^2 + x + 8 = 0$ 10) _____

Find the slope of the line containing the given pair of points. If the slope is undefined, state so.

11) (4, 5) and (9, 3) 11) _____

12) (8, –5) and (–1, –7) 12) _____

Rationalize the denominator. Assume all variables represent positive numbers.

13) $\frac{\sqrt{6}}{6\sqrt{5} - \sqrt{6}}$ 13) _____

Rationalize the denominator.

14) $\frac{\sqrt{5}+9}{\sqrt{3}-5}$ 14) _____

Simplify the radical expression. Assume all variables represent nonnegative real numbers.

15) $\sqrt[3]{64a^8b^5}$ 15) _____

16) $\sqrt[6]{x^6y^{11}z^3}$ 16) _____

Solve. Check for extraneous solutions.

17) $\sqrt{6x-5}=5$ 17) _____

18) $\sqrt{x+3}=x-3$ 18) _____

19) **Solve.** The length of a rectangle is 3 more than twice the width. The area is 44 square inches. Find the dimensions. 19) _____

20) **Solve.** The height of a triangle is 4 less than three times the base and its area is 36 square feet. Find the base and height. 20) _____

Solve using any appropriate method. If the system has an infinite number of solutions, use set –builder notation to write the solution set. If the system has no solution, state this.

21) $4x+8y=40$
$5x+4y=8$ 21) _____

22) $y=9x+18$
$6x+2y=-36$ 22) _____

Perform the indicated operation. Simplify, if possible.

23) $\frac{3x}{x^2-5x+6}-\frac{12}{x^2-6x+8}$ 23) _____

24) $\frac{m-5}{m^2-3m-4}+\frac{4m+5}{m^2+3m+2}$ 24) _____

Divide.

25) $(9m^2+19m-24)\div(m+3)$ 25) _____

26) $\frac{7r^3-27r^2-34r-30}{r-5}$ 26) _____

27) **Simplify.** $\frac{\sqrt{3}}{3}+\frac{1}{\sqrt{3}}$ 27) _____

28) **Simplify.** $\frac{\sqrt{18}}{6} + \sqrt{\frac{1}{2}} + \frac{\sqrt{2}}{2}$ 28) _____

29) **Solve.** $\frac{a+4}{a^2+5a} = \frac{-2}{a^2-25}$ 29) _____

30) **Solve.** $\frac{t+3}{t^2-2t} = \frac{10}{t^2-4}$ 30) _____

31) **Simplify.** $\frac{4-\frac{1}{x^2}}{4+\frac{4}{x}+\frac{1}{x^2}}$ 31) _____

32) **Simplify.** $\frac{2+\frac{5}{a}-\frac{3}{a^2}}{2-\frac{5}{a}+\frac{2}{a^2}}$ 32) _____

33) Simplify. $\frac{a^{\frac{3}{4}}b^2}{a^{\frac{7}{8}}b^{\frac{1}{4}}}$ 33) _____

34) Simplify. $\frac{a^{\frac{1}{3}}b^4}{a^{\frac{3}{5}}b^{\frac{1}{3}}}$ 34) _____

35) **Solve algebraically.** 35) _____

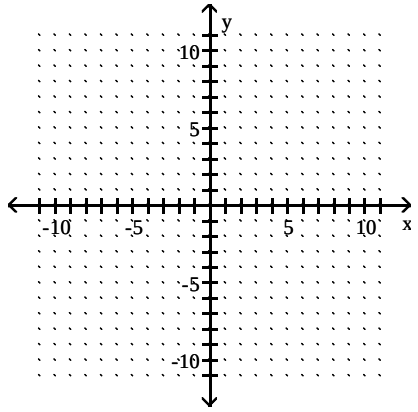
Jim and Jill go out to dinner , which cost them $64.25. The cost includes 8.5% sales tax and a 20% tip. What was the price of the dinner?

36) **Solve algebraically.** 36) _____

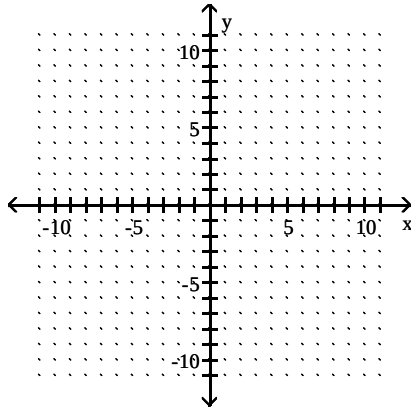
Fran takes Paul out to a restaurant on his birthday. She got a bill of $52.65, which included a 7% sales tax and a 10% tip. What was the cost of the meal?

Graph on a plane.

37) $2x + 4y \geq -8$ 37) _____



38) $x + y < -3$ 38) _____



39) **Solve.** 39) _____

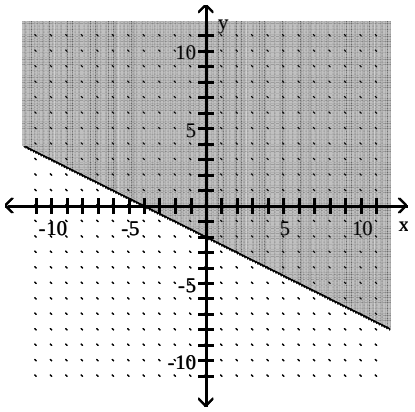
One end of a wire is attached to the top of a 24–foot pole; the other end of the wire is anchored to the ground 18 feet from the bottom of the pole. If the pole makes an angle of 90^{o} with the ground, find the length of the wire.

40) **Solve.** 40) _____

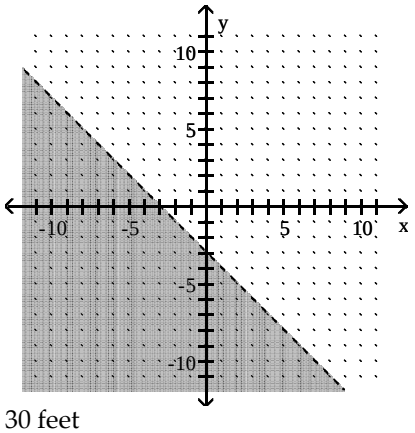
Two children are trying to cross a stream. They want to use a log that goes from one bank to the other. If the left bank is 5 feet higher than the right bank and the stream is 12 feet wide, how long must a log be to just barely reach?

1) $(7y - 10)(49y^2 + 70y + 100)$
2) $(3c + 5)(9c^2 - 15c + 25)$
3) $y = -5x - 34$
4) $y = \frac{2}{5}x$
5) $y = \frac{-4x + 4}{9}$
6) $n = \frac{R}{E - r}$
7) $\frac{1}{512}$
8) $\frac{1}{16}$
9) $\frac{-6 \pm \sqrt{33}}{3}$
10) $\left\{\frac{-1 \pm i\sqrt{31}}{2}\right\}$
11) $-\frac{2}{5}$
12) $\frac{2}{9}$
13) $\frac{1}{29}(\sqrt{30} + 1)$
14) $\frac{\sqrt{15} + 45 + 9\sqrt{3} + 5\sqrt{5}}{-22}$
15) $4a^2b\sqrt[3]{a^2b^2}$
16) $xy\sqrt[6]{y^5z^3}$
17) {5}
18) {6}
19) w = 4 in., l = 11 in.
20) b = 6 ft., h = 12 ft.
21) (–4, 7)
22) (–3, –9)
23) $\frac{3(x - 6)}{(x - 3)(x - 4)}$
24) $\frac{5m^2 - 14m - 30}{(m + 1)(m - 4)(m + 2)}$
25) $9m - 8$
26) $7r^2 + 8r + 6$
27) $\frac{2\sqrt{3}}{3}$
28) $\frac{3\sqrt{2}}{2}$

29) a = 4
30) a = 4
31) $\frac{2x - 1}{2x + 1}$
32) $\frac{a + 3}{a - 2}$
33) $\frac{b^{\frac{1}{4}}}{a^{\frac{1}{8}}}$
34) $\frac{b^{\frac{11}{3}}}{a^{\frac{4}{15}}}$
35) $50
36) $45
37)



38)



39) 30 feet
40) 13 feet