1. Which fractions are written in order from least to greatest?

a) b) c) d) e)

2. If , find .

a) – 2 b) 0 c) 4 d) 16
e) 24

3. Simplify .

a) b) c) d)

e)

4. The measure of an angle is 24 less than twice its supplement. If x equals the measure of the angle, which equation must be true?

a) b) c)

d) e)

5. A line through the points has slope . What is the value of r?

a) $r = 6$ b) $r =$ c) $r = -5$ d) $r = 5$
e) $r = -6$

6. If (a, b) is a solution to the system , then $2a + 3b$ is equal to:

a) 8 b) 27 c) 3 d) -3
e) -27

7. Solve . The solution added to twice its reciprocal is

a) b) c) d)

e)

8. After 105 games, a major-league baseball player had 28 home runs. At this rate, how many home runs, to the nearest tenth, would the player have at the end of the 162 game schedule?

a) 57.0 b) 607.5 c) 42.3 d) 67.5 e) 43.2

9. Ninety is what percent of 200?

a) 55% b) 40.5% c) 45% d) 222.2% e) 22.2%

10. Which one of the following sets of ordered pairs is **not** a function?

a) $\{(-1,-1), (0,0), (1,1), (3,3)\}$ b) $\{(-1,2), (-2,4), (0,0), (3,-6)\}$
c) $\{(1,-2), (2,-4), (0,0), (1,2)\}$ d) $\{(-3,9), (-2,4), (3,9), (2,4)\}$
e) $\{(1,-3), (-1,-3), (2,-3), (-2,-3)\}$

11. What is the domain of ?

a) b) c) d)

e)

12. A bag contains 3 red marbles, 6 blue marbles and 5 yellow marbles. If one marble is drawn at random from the bag, what is the probability that it will **not** be a blue marble?

a) b) c) d)

e)

13. If U = {0, 1, 2, ... , 9}, A = {1, 3, 4, 5, 9}, B = {2, 6, 7, 8} and C = {1, 3, 4, 6} then equals:

a) {1, 3, 5, 9} b) {1, 3, 4} c) {4} d) {4, 6}
e) {1, 3, 4, 5, 9}

14. The equation of the line through the point (– 1, 2) which has slope is:

a) b) c) d)

e)

15. Find the remainder when is divided by .

a) 48 b) – 60 c) 18 d) 24
e) 42

16. If , then is equal to:

a) 18 b) 729 c) 121 d) 40
e) 81

17. The graph of the function is a parabola with axis of symmetry and vertex:

a) b) c)

d) e)

18. When simplified, the expression is equal to:

a) b) c) – 1 d) 1

e)

19. Simplify the following product. (given)

a) b) c) d)

e)

20. Simplify

a) b) c) d)

e)

21. Find the median of the following daily high temperatures (in degrees Fahrenheit).

60, 60, 61, 61, 62, 62, 62, 64, 65, 66, 66, 67, 67, 68

a) 61 b) 62 c) 63 d) 64 e) 63.5

22. If , then

a) – 2 or 0 b) – 4 or 0 c) – 6 or – 4 d) – 4 or 2 e) – 6 or 0

23. If is an even integer, which of the following is **not** an even integer?

a) b) c) d) e)

24. Simplify. .

a) b) c) d) e)

25. If , then

a) ln 2 b) 2 c) – ln 2 d) – 2 e)

26. Find the equation of the axis of symmetry for the graph of , and state whether this axis contains the maximum point or the minimum point of the graph.

a) ; maximum b) ; minimum c) ; maximum

d) ; minimum e) ; minimum

27. If and , find .

a) 25 b) 9 c) 6 d) 4 e) 76

28. The sum of the squares of the lengths of all the sides of a non-square rectangle is 100. Find the

length of the diagonal of the rectangle.

a) 50 b) c) d) e)

29. If and then

a) 15 b) 125 c) 243 d) – 125 e) – 15

30. The range of the function is:

a) b) c) d) e)

31. Suppose that are not all equal to zero. If the graphs of and

are parallel, then express in terms of .

a) b) c) d) e)

32. Solve for t: .

a) – 2 b) c) d) e)

33. A motorist drove 150 miles on country roads before driving 50 miles on mountain roads. The rate of speed on the country roads was three times the rate on the mountain roads. The time spent traveling the 200 miles was 5 hours. Find the rate of the motorist on the country roads.

a) 20 miles/hour b) 60 miles/hour c) 50 miles/hour d) 45 miles/hour

e) 65 miles/hour

34. Find all real solutions of .

a) 4, 12 b) 8, – 6 c) 4 d) 12 e) no real solution

35. What is the solution set for the inequality ?

a) b) c)

d) e)

36. The sum of the x and y intercepts for the equation of the line through the points (6, – 12) and (– 6, 4) is:

a) 7 b) – 7 c) d) e) 0

37. If , then

a) b) c)

d) e)

38. If , then has the following value.

a) 3 b) – 3 c) d) e) – 1

39. The solution set to the inequality is:

a) b) c) d) e)

40. If an investor invests a certain principal at a specific interest rate for 1 year, the interest is $250. If he increases the principal by $1250 and the interest rate is decreased by 1%, the interest remains the same for one year. Find the principal P and the interest rate r.

a) P = $4166.67, r = 6% b) P = $3125.00, r = 8% c) P = $3571.43, r = 7%

d) P = $5000.00, r = 5% e) P = $4500.00, r = 6%