Toss-up bonus 5

TOSS-UP, 10 points

If *a* is negative, what does *a* plus the absolute value of *a* equal?

Answer: 0

BONUS: 20 points, 5 points each

Answer the following:

1) Solve $x^2 - 4 = 0$
2) What is the length of the edge of a cube if its volume is 27 cubic feet?
3) What is the measure of an angle that is 16 degrees less than its complement?
4) The angle of a triangle are $2x + 33$ degrees, $3x + 3$ degrees, and 84 degrees. Find x.

Answers: 1) ± 2
2) 3 feet
3) 37 degrees
4) 12

2) TOSS-UP, 10 points

How many real solutions does the equation $x^2 - 13x + 6 = 0$ have?

Answer: 2

BONUS: 20 points, 5 points each

Answer the following about $x^2 - 13x + 6 = 0$.

1) What is the discriminant?
2) When classified by its number of terms, what name is given?
3) What is the larger solution of the equation?
4) What is the smaller solution of the equation?

Answers: 1) 25
2) Trinomial
3) 3/2 or 1 ½ or 1.5
4) 2/3

3) TOSS-UP, 10 points

If log(A) = 2 and log(B) = 5, find log (AB).

Answer: 7

Find each of the following using log(A) = 2 and log(B) = 5.

1) log(A/B)
2) log(vB)
3) log(A^2)
4) log(A^2/B^3)

Answers: 1) –3
2) 5/2 or 2 ½ or 2.5
3) 4
4) –11

4) TOSS-UP, 10 points

What is the inverse of the function $f(x) = 2x$?

Answer: f⁻¹(x) = ½ x

Find the following for $f(x) = 2x$?
1) domain
2) range
3) $f^{-1}(-2)$
4) $f^{-1}(f(x))$

Answers: 1) All real numbers
2) All real numbers
3) –1
4) x

5) TOSS-UP, 10 points

Out of a group of 24 students 6 have blue eyes. What percent do not have blue eyes?

Answer: 75%

BONUS: 20 points, 5 points each

Answer the following:

1) How many terms are in the sequence {2, 7, 12, 17, …, 202}?
2) If the hypotenuse of an isosceles right triangle is 2, what are the lengths of the legs?
3) Find all solutions to the equation $x^2 + 7x + 12 = 0$
4) What is the exact area of a circle of radius 2?

Answers: 1) 41
2) √2
3) x = -3, -4
4) 4p

6) TOSS-UP, 10 points

Expand $(x + y)^3$

Answer: $x^3 + 3x^2y + 3xy^2 + y^3$

BONUS: 20 points, 5 points each

Answer the following:

1) What is the measure of the interior angles of a regular pentagon?
2) Are the lines $y = 2x + 3$ and $-2x + y = 7$ parallel, perpendicular, or neither?
3) Is the function $y = x^2 + 2$ linear, quadratic, cubic, or none of these function?
4) What special quadrilateral will be formed by drawing line segments from the midpoint of one side of an equilateral triangle to each of the other two sides?

Answers: 1) 108 degrees
2) parallel
3) quadratic
4) Rhombus

7) TOSS-UP, 10 points

Andre typed 840 words in 30 minutes. How fast in words per minute did Andre type?

Answer: 28

BONUS: 20 points, 5 points each

Answer the following:

1) Give the coordinates of the point where $2x + 3y = -5$ and $5x + y = 7$ intersect.
2) Solve $x^2 + 1 = 0$.
3) A pair of standard dice is rolled. What is the probability that a sum of 8 is rolled?
4) What is the greatest common factor for the polynomial $15x^5 - 25x^7$?

Answers: 1) (2, -3)
2) ± i
3) 5/36
4) $5x^5$

8) TOSS-UP, 10 points

Are the lines $y = 5x + 7$ and $y = 1/5\ x + 8$ parallel, perpendicular, or neither?

Answer: Neither

BONUS: 20 points, 5 points each

Answer the following:

1) What is the exact volume of a cone of height 2 and radius 1?
2) The ratio of boys to girls at a camp is 3 to 4. If there are 135 boys, how many girls are there?
3) The cost of a car with an 8% sales tax included is $21,600. What is the price of the car without sales tax?
4) If Mary is now twice as old as Fred and 10 years ago was 3 times as old as Fred, how old is Mary now?

Answers:1) 2p
2) 180
3) $20,000
4) 40