Algebra II Common Core

Name: _____

1) What is the sum of $\frac{5}{3}x^2 - \frac{8}{5}x + \frac{7}{8}$ and $-\frac{3}{5}x^2 - \frac{1}{2}x + \frac{1}{4}$?

A) $\frac{2}{15}x^2 - \frac{9}{10}x + 1$

C) $x^2 - \frac{9}{7}x + \frac{2}{3}$

B) $\frac{8}{15}x^2 - \frac{9}{10}x + 2$

D) $\frac{16}{15}x^2 - \frac{21}{10}x + \frac{9}{8}$

2) Identify the Greatest Common Factor for the terms of the given polynomial expression. Write the polynomial in an equivalent factored form. [*All coefficients should be rational.*]

$xy - \frac{1}{2}y^3$

GCF = _____

Answer: _____

3) Which one of the following equations represents a polynomial function that is neither odd nor even?

A) $f(x) = 3x^4 + 5x^2 - 2x + 4$

B) $f(x) = 4x^2 + 2$

C) $f(x) = x^3$

D) $f(x) = x^5 + 6x$

4) Which one of the following fractions is defined for *all* real numbers?

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

C) $\frac{x^2 - 1}{x^2}$

B) $\frac{x^2 - 1}{x^2 + 1}$

D) $\frac{x^2 - 1}{x + 1}$

5) The length of a rectangular picnic blanket is represented by the expression $\frac{3a}{4b}$ and the width is represented by $\frac{2c}{3d}$. What is an expression that can be used to represent the area of the picnic blanket?

A) $\frac{9ad}{8bc}$

C) $\frac{2ac}{bd}$

B) $\frac{6ac}{4b + 3d}$

D) $\frac{ac}{2bd}$

6) Simplify: $2\sqrt{3}(3\sqrt{6} - 3\sqrt{3})$

A) 18

C) $12\sqrt{3} - 18$

B) $3\sqrt{6} - 6\sqrt{3}$

D) $18\sqrt{2} - 18$

7) What is the exact length of side x in the triangle below?
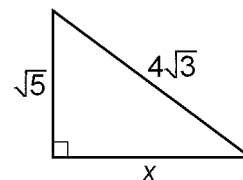

A) $\sqrt{17}$

C) $\sqrt{43}$

B) $\sqrt{23}$

D) $\sqrt{53}$

8) What is the *greatest* possible integral value of x for which $\sqrt{x - 5}$ is an imaginary number?

A) 5   B) 6   C) 3   D) 4

9) Write a polynomial equation in standard form having roots 3 and $2 \pm 7i$.

Show all work.

Answer: _____

10) What is the solution set for the system below?

$x^2 + y^2 = 25$
$x - y = 1$

A) (5,4), (-4,-5)

C) (3,4), (-4,-3)

B) (4,3), (-3,-4)

D) (4,3), (-4,-3)

11) Given the equation $y^2 - 4x - 4y + 4 = 0$, what are the coordinates of the vertex and focus?

A) Vertex: (2,0)
   Focus: (-2,1)

C) Vertex: (-2,0)
   Focus: (2,1)

B) Vertex: (0,-2)
   Focus: (1,-2)

D) Vertex: (0,2)
   Focus: (1,2)

12) Which of the following statements below are true based on the definition of the logarithm function f(x) = $\log_b (x - 2)$?

    I. $x \neq 4$
    II. $b > 0$
    III. $b \neq 1$
    IV. $x > 2$

A) II, III, and IV, only
B) II, only
C) I, II, and III, only
D) I and III, only

13) Use the accompanying randomization distribution to determine the probability of obtaining the described Diff value. Also state whether the Diff value would be likely or unlikely to occur. [*Justify your response.*]
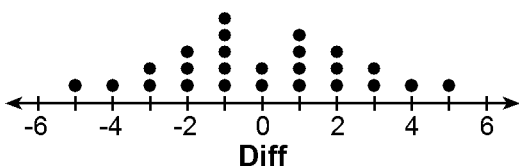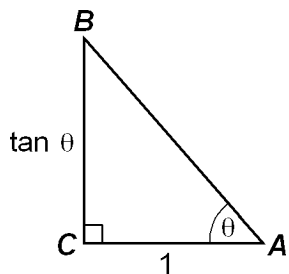

Diff = 5

Show all work.

Answer: P(Diff) = _____

_____

_____

_____

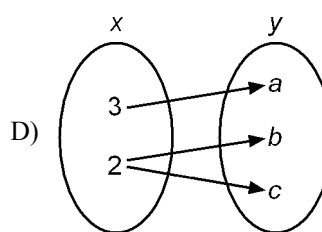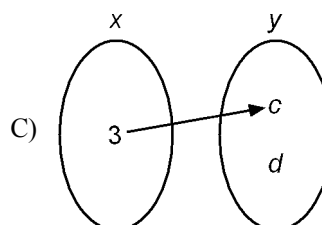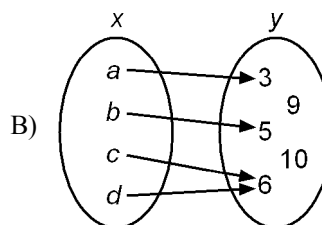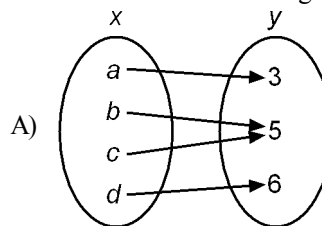14) In right triangle $\triangle ABC$, $AC = 1$ and $CB = \tan \theta$. What is the length of AB?

A) $\tan^2 \theta$
B) $\sec \theta$
C) $1 + \tan \theta$
D) $\csc \theta$

15) The expression $\left(64^{-\frac{1}{2}} - 16^{\frac{1}{4}} \right)^{\frac{1}{2}}$ is

A) an irrational number
B) a perfect square
C) a non-real number
D) a negative real number

16) Which one of the following represents an onto function?

17) Prove the statement $\tan \theta + \cot \theta = \sec \theta \csc \theta$ is an identity for the values of θ for which the statement is defined. Describe this set of values. **Show all work.**

18) Which of the following *best* describes the series

$$\sum_{k=1}^{25} 2(3)^{k-1} ?$$

A) arithmetic; $a = 2, d = 3$
B) geometric; $a = 2, r = 3$
C) geometric; $a = 3, r = 2$
D) arithmetic; $a = 3, d = 2$