Math III REVIEW for NCFE

1. Factor:$x^2 - 13x - 30$

2. Find the solutions using the quadratic formula:$9x^2 - 4x = -1$

3. Simplify:$9(5x - 3y) - 11(4x + 1)$

4. Simplify: $(64x^{-3}y^9)^{-\frac{2}{3}}$

5. Simplify:$\frac{6}{4-i}$

6. Simplify:$\left(\frac{196m^{-8}}{9n^2}\right)^{\frac{1}{2}}$

7. Simplify:$(7 - 5i)(4 + 7i)$

8. Simplify:$7(6 - 7i) + 3(2 + 3i)$

9. Simplify: $(11 + 19i) - (3 - 16i) - 8i$

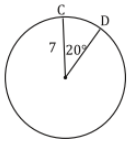
10. A school is mapped on a coordinate plane. The cafeteria is located at point $C(4,1)$. The Library is located at point $L(-3,-5)$. The Principal's Office is located at $P(-1,5)$. What is the difference between the distance from CL to LP?

11. Convert from degrees to radians:$335°$

12. Convert from radians to degrees:$\frac{9\pi}{4}$

13. The area of a circle is 225π square inches. Find the area of the sector whose central angle is $45°$.

14. Find the arc length of CD:



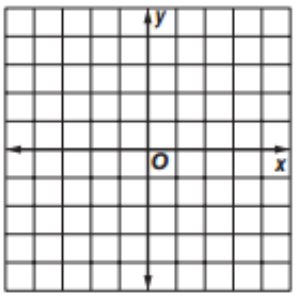
15. 2000 freshman at NC State took a biology exam. The scores were normally distributed with a mean of 84 and a standard deviation of five. Approximately how many students scored between a 79 and 89?

16. Use the Unit Circle to find the exact value:$\sin\frac{3\pi}{2}$

17. Fill in the blank: Parallel lines have _____ slopes.

18. Graph these lines on the coordinate plane. Shade the solution region:

$x + y > -2$
$3x - y \geq -2$



19. Find the solution using a system of equations:

Last year the volleyball team paid $5 per pair for socks and $17 per pair for shorts on a total purchase of $315. This year they spent $342 to buy the same number of pairs of socks and shorts because the socks now cost $6 a pair and the shorts cost $18.

How many pairs of socks and shorts did the team buy each year?

20. Identify the ordered pair that represents the vertex of this quadratic: $f(x) = -2x^2 + 4x - 7$

21. Identify the equation that represents the axis of symmetry for this quadratic: $f(x) = x^2 - 12x + 19$

22. Identify the vertex: $f(x) = -9(x + 1)^2 + 8$

23. Divide using synthetic division: $x^4 - 3x^3 - 11x^2 + 3x + 10 \div (x - 5)$

24. Determine if the given binomial is a factor of the polynomial in question #23

25. Find the remainder: $3m^5 + m - 1 \div (m + 1)$

26. Write a quadratic equation with the given roots: $-\frac{1}{3}, 2$

27. Find a value of c that makes the trinomial a perfect square: $x^2 - 20x + c$

28. Write an equation of a circle with a center: $(-9,5)$ and passes through the point: $(1, -2)$

29. Identify the center and radius: $(x + 8)^2 + (y - 3)^2 = 169$

30. Fill in the blank: Opposite sides and angles of a parallelogram are _____.

31. The diagonals of a parallelogram _____ each other.

32. Consecutive angles of a parallelogram add up to _____.

33. List the three ways triangles can be proven similar:

34. A surveyor 100 meters from the base of a cliff measures the angle of elevation to the top of the cliff as 107° . What is the height of the cliff?

At a point 180 feet from the base of the building, the angle of elevation to the fifth floor is 52° and to the tenth floor is 83°. How much higher is the tenth floor than the fifth floor?

A 32 foot ladder is placed against a wall at 62° with the ground. How far away from the wall is the base of the ladder?

A person at the top of a cliff 125 feet tall sees a boat in the water below. His sighting of the boat is at an angle of depression of 24°. How far is the boat from the base of the cliff?

A 47 inch goal post is leaning against a fence. If the post is 22 inches away from the base of the fence, what angle is formed between the ground and the post?

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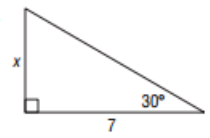

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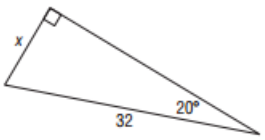

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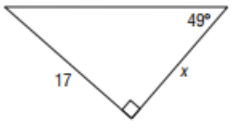

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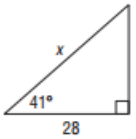

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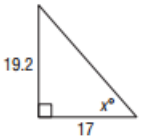

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