CBGS Pre-Calculus II (MTH 164—Trigonometry)   Name: _____
Summer Work 2013-14
40 pts

Directions:
- This assignment will be your first grade for the first nine-weeks and is due the first day of class. There will be a penalty of 1 pt for each day the assignment is late.
- This is an honor code assignment. If you want to talk to someone, contact your instructor at their CBGS email.
- Each problem will be worth 1 pt.
- Show all necessary work to justify your answers. Mysteriously appearing answers will be awarded at most ½ credit.
- If you need to do work on a separate page, make sure the problems are numbered, organized, and worked in the order of the packet. In addition, write on the printed copy "see attached work."
- All work should complete, neat, and well-organized. If your process and answer are not obvious from your work, you may lose credit.
- There are some relatively simple ideas in these pages that you may have never seen before or that you haven't seen for a while. That means that I want you to dig a little to learn how to do the problems. It will help you in the long run during the course of the semester.

(1-4)   Simplify the following rational number expressions. Show your work. If you did the problem in your head, write down on paper the steps what you did in your head. Answers may NOT contain decimals and may NOT be in complex fraction form. All answers must be reduced.

1. $\dfrac{x}{3} + \dfrac{x}{2}$

2. $\dfrac{5x}{15} \cdot \dfrac{3x}{2}$

3. $\dfrac{\dfrac{y+1}{9}}{3}$

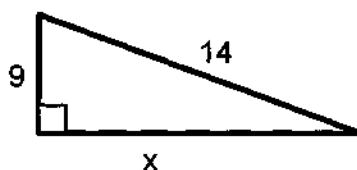4. $\dfrac{12}{\dfrac{4}{m}}$

(5-7)   Solve each of the following proportions for the given variable. Leave answers exact.

5. $\dfrac{x}{9} = \dfrac{2}{5}$

6. $\dfrac{8}{3} = \dfrac{10}{y}$

7. $14 = \dfrac{3}{m}$

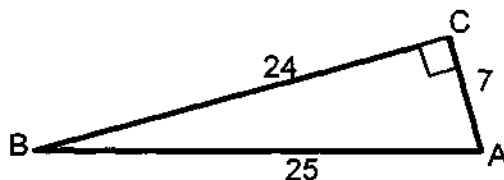8.   Determine the **exact** value of the missing side.

(9-11) Use the triangle at the right to determine the values below. Leave all answers as exact and reduced fractions.

9.   sin B = _____

10.   cos A = _____

11.   tan B = _____

12.   Solve the trigonometric equation for x. Leave your answer as a decimal correct to 3 decimal places.

        $\sin 35° = \dfrac{x}{4.5}$

13.   Solve the trigonometric equation for x. Leave your answer as a decimal correct to 3 decimal places.
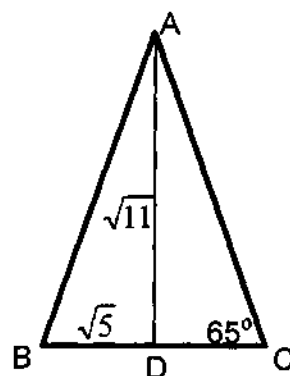
        $\tan 20° = \dfrac{112}{x}$

14.   Solve the trigonometric equation for x. Leave your answer as a decimal correct to 3 decimal places.
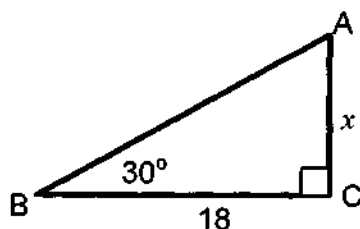
$$\cos x = \frac{3}{5}$$

(15-16)   Triangle ABC shown below is an isosceles triangle, with $\overline{AD}$ drawn as the median.
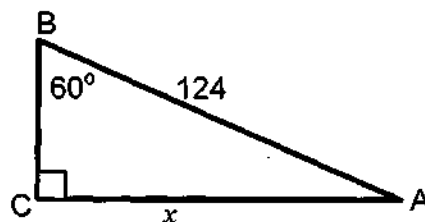
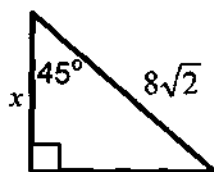15. $m\angle BAD =$ _____

16. $AC =$ _____

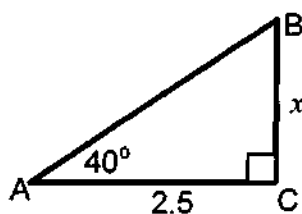17.   Determine the **exact** value of the missing side, x.

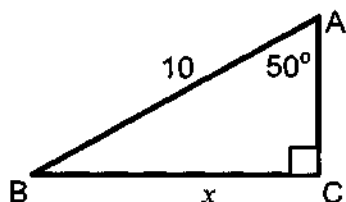18.   Determine the **exact** value of the missing side, x.

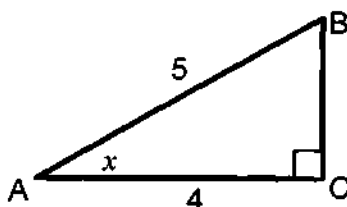19.   Determine the **exact** value of the missing side.

20. Using trigonometry, determine the length of the missing side to 3 decimal places.

```
                    B
                    |
                   /|
                  / | x
                 /  |
            40° /   |
           A____|___|
              2.5    C
```

21. Using trigonometry, determine the length of the missing side to 3 decimal places.

```
                         A
              10     50°/|
                  /      |
              /          |
          /              |
       B_____|
              x          C
```

22. Using trigonometry, determine the measure of the missing angle to 3 decimal places.

```
                        B
                 5    /|
                  /    |
              /   x    |
          A_____|
               4       C
```
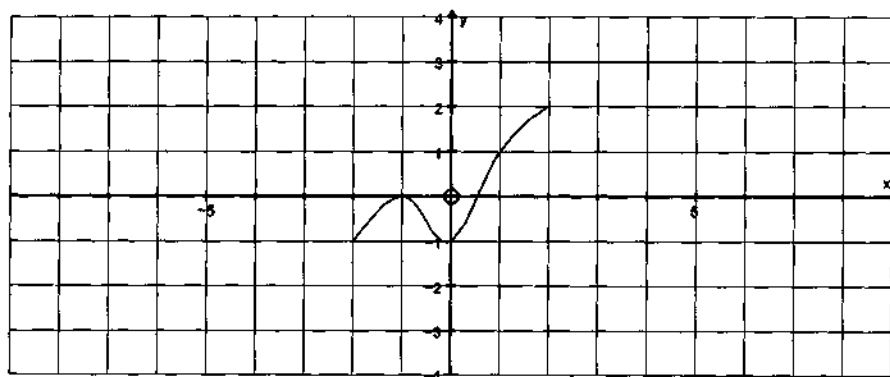
23. Simplify the complex rational expression: $\dfrac{\dfrac{1}{x+h} - \dfrac{1}{x}}{h}$

24. Simplify the complex rational expression: $\dfrac{\dfrac{x}{y} - \dfrac{y}{x}}{\dfrac{x}{y} + 1}$
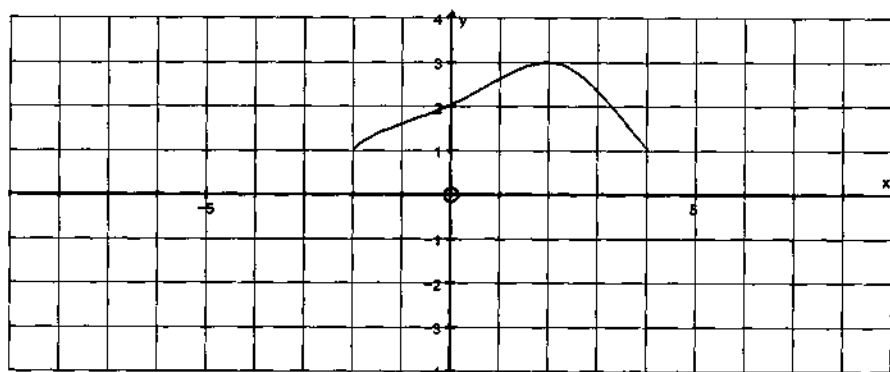
25. Determine the inverse of: $y = \dfrac{1}{3}x - 5$

26. Determine the inverse of: $f(x) = 2\sqrt[3]{x+3} - 4$

27. Given some function, $f(x)$, graphed below, graph $y = 2 \cdot f(x-4)$.

28. Given some function, $f(x)$, graphed below, graph $y = -f(2x) - 3$.

29. Rationalize the denominator: $\dfrac{3}{\sqrt{5}}$

30. Rationalize the denominator: $\dfrac{2}{\sqrt[3]{20}}$

31. Rationalize the denominator: $\dfrac{6}{4-\sqrt{2}}$

32. Solve the equation: $3z^3 - 6z^2 = 0$

33. Solve the equation: $6x^2 + 13x - 5 = 0$

34. Solve the equation: $4y^2 - 9 = 0$

35. Solve the equation: $5mn - 15m + n - 3 = 0$

36. Solve the equation: $2(x-5)^2 = 14$

(37-38) Use the information given below to answer the following 2 questions. If necessary, research and review the Triangle Inequality Theorem.

$$\text{In } \triangle ABC, \ AB = 11 \text{ and } BC = 15.$$

37. the greatest *integer* measure that $\overline{AC}$ can have is _____.

38. the least *integer* measure that $\overline{AC}$ can have is _____.

39. In $\triangle ABC$, $AB = 36$, $AC = 49$, and $BC = 41$. Write the angles of the triangle in order from **least** to **greatest**. If necessary, research and review the Hinge Theorem.

40. Use the diagram below to fill in the blank with $<$, $>$, or $=$.

AD _____ BC