Math 1312 Final Test Review

Final Exam covers chapters 1-6, 8 (only sections covered in class) from the textbook.

How to study: Study the class notes, review homework problems, and try to do as many exercises as you can from the textbook. Note that answers are provided at the back of the book to all odd numbered problems.

You need to know what definitions mean and theorems and postulates as facts but you do not need to memorize them word by word.

Here I provide some examples for you. This is not a complete list, studying only these examples is not enough!



5. In an isosceles trapezoid the bases are 70cm and 30cm. Find the length of the median.

x = 14





7. Find the side of a rhombus with diagonals 12 and 14.

$$S^{2} = 7^{2} + 6^{2}$$
 $S = 85$



8. What is the measure of each interior angle of a regular hexagon?

$$T = \frac{(h-2) \cdot 180}{h} = \frac{(6-2) \cdot 180}{6} = \frac{120^{\circ}}{6}$$

9. The measure of each exterior angle of a regular polygon is 40°. How many sides does it have?



10. Suppose that the perimeter of a quadrilateral is 70 and the lengths of the sides are in ratio 2: 3: 4: 5. Find the measure of each side.

sides: 10;15;20;25 2x+3x+4x+5x = 7014x = 70X=5 **11.** $\triangle DEF$ is isosceles. $\angle D$ is the vertex angle, $m \angle E = 2x + 40$, and $m \angle F = 3x + 22$. Find the measure of each angle. $m < E = m < F = 2(18) + 40 = 76^{\circ}$ 2x + 40 = 3x + 2240 = x + 22x = 18m < D = 180 - 2(76)= 28°652 **12.** Find *x*. $x^{2} + (6\sqrt{3})^{2} - 12^{2}$ x2= 1122-653 $6\sqrt{3}$ = 36.3 F 108 x= 144-108 = 136=6

13. Find the exact value of *x*.





14. Find the exact value of x.





15. Find *x*, *y*, and *z*.



$$X = \sqrt{13.9} = \sqrt{9.13} = 3\sqrt{15}$$
$$Y = \sqrt{4.9} = \sqrt{36} = 6$$
$$I = \sqrt{13.4} = \sqrt{4.15} = 2\sqrt{13}$$

3,4,5 6,8,10

16. Find the value of x in the circle below.







18. Find AC given DE = 5, BE = 16, and AE = 10.





19. Given PR = 8, PS = 4, find PQ.



 $PR^{2} = QP(SP)$ $8^{2} = x(4)$ 64 = 4x x = 16 QS = 16-4=12PQ = 16

20. Given $\Delta RTS \sim \Delta UWV$ (not shown). Find WV if RT = 4, UW = 6, and TS = 8.



21. Find $m \angle 4$ and $m \angle 5$, if $m \angle 2 = 127^{\circ}$.



$$m \le 4 = 53^{\circ}$$

 $m \le 5 = 127^{\circ}$

22. Name the additional pais of parts that must be congruent for us to use the $SSS \cong$ method. In a parallelogram *MNOP* with diagonal *MO*, $\Delta MNO \cong \Delta OPM$.



23. In the figure below, $p \parallel m, m \angle 2 = 64^{\circ}$ and $m \angle 7 = 112^{\circ}$. Find the following angle measures $m \angle 1, m \angle 3, m \angle 9$, and $m \angle 10$.



 $m < l = 116^{\circ}$ $m < 3 = 116^{\circ}$ $m < 9 = 112^{\circ}$ $m < 10 = 68^{\circ}$

- **24.** State whether the following statements are Always true, Sometimes true, or Never true, A. If AM = MB, then A, M, and B are collinear. A. If AM = MB, then A, M, and B are collinear. - B **B.** If two angles are congruent, then they are right angles. C. The supplement of an obtuse angle is another obtuse angle \sim obtuse? ΛT **25.** Two angles are supplementary. One angle is 40° more than four times the other. Find the measures of the two angles. 4x + 40 + x = 180m < l = x5x + 40 = 180M < 2 = 4x + 405x = 140 $m < l = 2 g^{D}$ m < 1 = 28 $m < 2 = 4(28) + 40 = 152^{\circ}$ 26. To prove a theorem of the form "*If P, then Q*" by the indirect method, the first line of the proof should read: Suppose that $\underline{not} \ Q$ is true.
- **27.** In triangle ABC, $m \angle C = 46^{\circ}$, and $m \angle B = 93^{\circ}$. Name the shortest side of the triangle.



28. In $\triangle ABC$, *M* is the midpoint of \overline{AB} and *N* is the midpoint of \overline{AC} . If MN = 3x - 11 and BC = 4x + 24, find the value of *x*.



30. Assuming that a 90° arc has an exact length of 4π , find the length of the radius of the circle.

 $4\pi = \frac{90}{360} \cdot C \quad 4.4\pi = \frac{4}{4} C \quad C = 16\pi$ $C = \pi d \quad d = 16$ += 8

Formulas to be provide on the Final Exam. *They will be a link!*

$$C = \pi d$$
$$\ell = \frac{m}{360} \cdot C$$