SchoolNova, Math 5b Homework 16 Triangles - Part I March 10, 2019

Please provide sufficient details about how you solved the problem. More difficult problems are marked with a \*. If unable to solve a problem, please present your thoughts and any partial solution.

1. Classify the following triangles:



2. Segment  $\overline{AB}$  is a leg of an isosceles right triangle. Find the coordinates of point C, and sketch  $\triangle ABC$ .



3. For  $\triangle ABC$ , prove the **triangle sum theorem**, that is,  $m \angle 1 + m \angle 2 + m \angle 3 = 180^{\circ}$ .



4. Find the measure of the numbered angles shown:



5. For  $\triangle ABC$ , prove the **exterior angle theorem**, that is,  $m \angle 1 = m \angle A + m \angle B$ .



6. Find the measure of the exterior angles shown; utilize your expert algebra skills.



7. Naming Congruent Parts: In the following figure, identify all pairs of congruent angles and sides, and write the corresponding statements, for example,  $\angle D \cong \angle R$  and  $\overline{DE} \cong \overline{RS}$ .



8. In the following figure, the small triangles  $\triangle ADB$ ,  $\triangle CDA$  and  $\triangle CDB$  are congruent.



- (a) Explain why  $\triangle ABC$  is equilateral.
- (b) Find  $m \angle BDC$ .
- (c) Each of the small isosceles triangle has two congruent acute angles. Find  $m \angle DBC$  and  $m \angle DCB$ .

9. The triangles with such measurements do not exist. Describe what is wrong with them?

