1 Standards:

19 Derive and apply the relationships between the lengths, perimeters, areas, and volumes of similar figures in relation to their scale factor.

29 Find patterns and relationships in figures including lines, triangles, quadrilaterals, and circles, using technology and other tools. a. Construct figures, using technology and other tools, in order to make and test conjectures about their properties. b. Identify different sets of properties necessary to define and construct figures.

35 Discover and apply relationships in similar right triangles. a. Derive and apply the constant ratios of the sides in special right triangles (45°-45°-90° and 30°-60°-90°).

2 Discourse

The third basic trigonometric function is tangent. Remember, we have seen two different definitions for tangent. Given a triangle, we can define the tangent function as $\tan\theta = \frac{\text{opposite}}{\text{adjacent}}$. We can also define the function, $\tan\theta$ as the ratio of $\sin\theta$ to $\cos\theta$, $\tan\theta = \frac{\sin\theta}{\cos\theta}$.

2.1 Examples

You may find the unit circle to be helpful.

1. $\tan 210°$
2. $\tan 270°$
3. $\tan 48°$

3 Exercises

Find the tangent of the given angle.

1. $30°$
2. $0°$
3. $90°$
4. $60°$
5. $45°$
6. $198°$
7. $13°$
8. $312°$
9. $75°$
10. $80°$

4 Answer Document

1. (a) $\tan\theta =$ _____
2. (a) $\tan\theta =$ _____
3. (a) $\tan\theta =$ _____
4. (a) $\tan\theta =$ _____
5. (a) $\tan\theta =$ _____
6. (a) $\tan\theta =$ _____
7. (a) $\tan\theta =$ _____
8. (a) $\tan\theta =$ _____
9. (a) $\tan\theta =$ _____
10. (a) $\tan\theta =$ _____