Tenth Set of Homework

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Due: Monday March 7

Please note: You should fully justify your answers.

Review of right triangle trigonometry

1. Find exact values for each of the following. Simplify your answers as much as possible. Do **not** use a calculator.
   (a) $2\sin(60°)^2 + 2\cos(30°)^2$
   (b) $(\tan(60°) - 2)^2$
   (c) $\cos(45°)\sin(30°)$
   (d) $\tan(60°)\cos(30°)$
   (e) $\dfrac{2\sin(45°)}{4\sin(30°) + \tan(60°)}$
2. Find exact values for the sine the cosine and the tangent for the angle θ in each of the triangles in Figure 1.

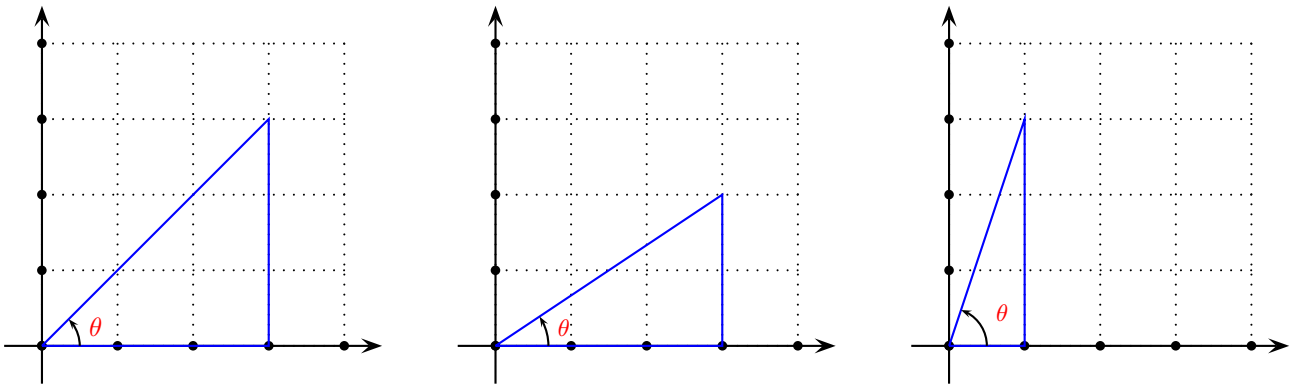

Figure 1: The triangles of Questions 2 and 3

3. Find the angle θ in each of the triangles in Figure 1.
4. ABC is an isosceles triangle: sides AB and AC are congruent. If $A = 70°$ and $BC = 6$ find the area of ABC.

Arcs and angles in the circle

1. At which quadrant is the terminal point of the following arcs?
   (a) $-25°$
   (b) $-120°$
   (c) $210°$
   (d) $320°$

(e) 600°

(f) 1560°

(g) -1230°

2. For each of the following arcs determine how many complete cycles it contains and find a co-terminal arc θ with $0^\circ \leq \theta < 360^\circ$.

   (a) -45°

   (b) 539°

   (c) -876°

   (d) 1890°

   (e) -990°

   (f) 585°

   (g) 854°

   (h) -126°

   (i) 1080°

3. For each of the arcs in the previous question find a co-terminal arc θ with $-180^\circ < \theta \leq 180^\circ$.

4. What's the degrees measure of the following arcs?

   (a) $\frac{3}{4}$ of a cycle.

   (b) $\frac{1}{6}$ of a cycle.

   (c) $\frac{3}{8}$ of a cycle

   (d) $\frac{5}{12}$ of a cycle.

   (e) $\frac{31}{60}$ of a cycle.

   (f) $\frac{21}{60}$ of a cycle.