
EXAM

Exam 1 (Corrected Version)

Math 1321, Spring 2007

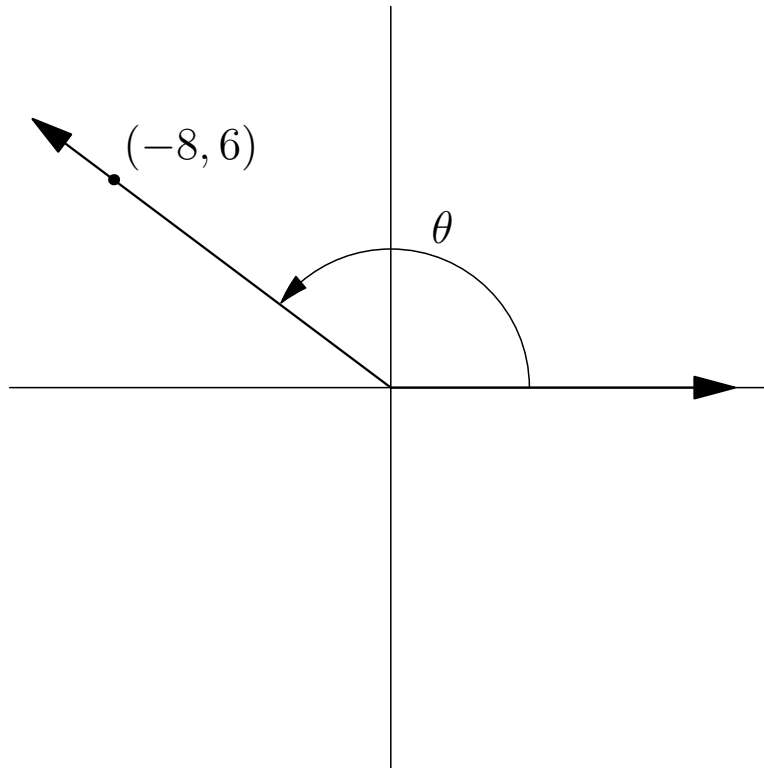
Feb. 16, 2007

- Write all of your answers on separate sheets of paper. You can keep the exam questions when you leave. You may leave when finished.
- You **must** show enough work to justify your answers. Unless otherwise instructed, give answers to the appropriate number of significant figures.
- This exam has 7 problems. There are **440 points total**.

Good luck!

60 pts.

Problem 1. In the diagram below, find the six trigonometric functions of the angle θ . Show your answers in fractional form.



60 pts.

Problem 2. If $\tan(\theta) = 3/4$ and $\cos(\theta) < 0$, find $\sin(\theta)$ and $\cos(\theta)$. In what quadrant does the angle θ lie?

80 pts.

Problem 3. In each part, find the **exact** values of $\cos(\theta)$, $\sin(\theta)$ and $\tan(\theta)$. Draw a picture to illustrate your reasoning.

- A. $\theta = 180^\circ$
- B. $\theta = 30^\circ$
- C. $\theta = 120^\circ$
- D. $\theta = -45^\circ$

60 pts. **Problem 4.** A surveying device at ground level measures the angle of elevation of the top of a tower to be 27.0° . A laser range finder on the device shows that the top of the tower is 225 feet from the device. How tall is the tower? How far from the base of the tower is the surveying device?

60 pts. **Problem 5.** An airplane is flying at an airspeed of 200 miles per hour with a heading of 205.0° . The wind is blowing from the east with a speed of 40 miles per hour. What is the speed and heading of the plane over the ground?

60 pts. **Problem 6.** Solve all triangles (if any) with $A = 20^\circ$ and $b = 5.0$ and $a = 3.0$

60 pts. **Problem 7.** Solve the triangle with $a = 10$, $b = 20$, and $c = 16$.
