

Homework questions for section 13.3, 13.4, 13.5

Math 114, Spring 2008

Each of the three problems below refers to the points $P(2, 0, 1)$, $Q(1, 4, 0)$ and $R(0, 2, 3)$.

1. Find the area of triangle PQR .

- A) $\sqrt{19}$ B) $\frac{1}{2}\sqrt{19}$ C) $\sqrt{38}$ D) $\frac{1}{2}\sqrt{38}$ E) $\sqrt{76}$ F) $\frac{1}{2}\sqrt{76}$

2. If θ denotes the angle between the plane $x + 3y + 3z = 5$ and the plane through the points P, Q, R listed above, what is the value of $\cos \theta$?

- A) $\frac{1}{10\sqrt{19}}$ B) $\frac{1}{38\sqrt{5}}$ C) $\frac{19}{4\sqrt{5}}$ D) $\frac{19}{20\sqrt{2}}$ E) $\frac{10}{\sqrt{19}}$ F) $\frac{20}{19\sqrt{2}}$

3. What is the distance from the origin $(0, 0, 0)$ to the plane through the points P, Q, R listed above?

- A) $\frac{13}{\sqrt{19}}$ B) $\frac{15}{\sqrt{19}}$ C) $\frac{17}{\sqrt{19}}$ D) $\frac{13}{\sqrt{38}}$ E) $\frac{15}{\sqrt{38}}$ F) $\frac{17}{\sqrt{38}}$