MA 162 Quiz 1

June 13, 2019

You have **15 minutes** to complete this quiz. Each correct answer will award you **five points**. Show your work **neatly** and you will receive **two** to **three points** depending on your level of correctness.

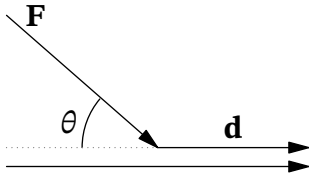
Problem 1.1. Find the projection of $\mathbf{v} = \langle 1, 0, 0\rangle$ onto $\mathbf{w} = \langle 2, -1, 1\rangle$

(A) $\frac{1}{3}\langle 1, 2, 3\rangle$ (B) $\frac{1}{3}\langle 2, -1, 1\rangle$ (C) $\langle 1, 1, -1\rangle$
(D) $\langle 2, -1, 1\rangle$ (E) $\langle 3, 1, 4\rangle$

Problem 1.2. Which of the following vectors has the same direction as $\mathbf{v} = \langle -1, 2, 2\rangle$, but magnitude 6?

(A) $\langle -2, 4, 4\rangle$ (B) $\langle 2, 4, 4\rangle$ (C) $\langle 4, 2, 4\rangle$
(D) $\sqrt{2}\langle -1, 2, 2\rangle$ (E) $\langle 0, 6, 0\rangle$

Problem 1.3. A force $\mathbf{F}$ of magnitude F is exerted by a broom handle on the head of the broom, which has a mass of m. The handle is at an angle θ to the horizontal, as shown below. The work done by the force on the head of the broom as it moves a distance d across a horizontal floor is



(A) $Fd\sin\theta$ (B) $Fd\cos\theta$ (C) $Fd\sin(\pi - \theta)$
(D) $Fm\tan\theta$ (E) $Fmd\sin\theta$