

**Name** \_\_\_\_\_ **No calculators. Present neatly. Score** \_\_\_\_\_.

A laser pointer is placed on a platform that rotates at a rate of 20 revolutions per minute. The beam hits a wall 8 m away, producing a dot of light that moves horizontally along the wall. Let  $\theta$  be the angle between the beam and the line through the searchlight

perpendicular to the wall. How fast is this dot moving when  $\theta = \frac{\pi}{4}$ ?

Your work:

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**Name** \_\_\_\_\_ **No calculators. Present neatly. Score** \_\_\_\_\_.

Two parallel paths 15 m apart run east-west through the woods. Genie jogs east on one path at 10 km/h, while Joshua walks west on the other path at 6 km/h. If they pass each other at time  $t = 0$ , how far apart are they 3 s later, and how fast is the distance between them changing at that moment?

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Your work: