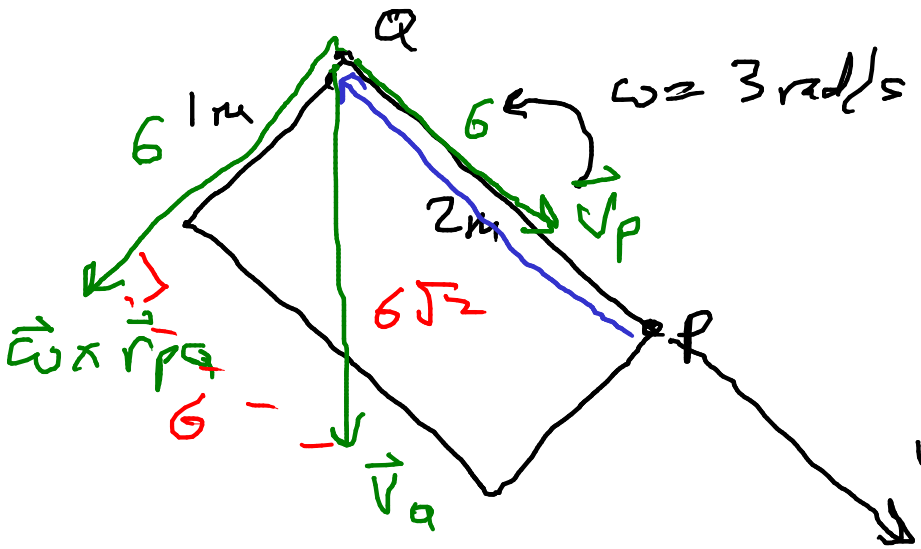
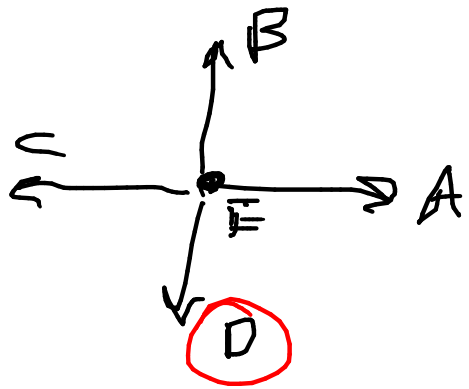
- No electronics, no calculators
  Also no calculating machines
- 1 page of notes, double sided
  handwritten.
- practice exam (paper) — discussion
  — online
- study PL — randomized PL practice exam
- HW 1-4 (before RBs), no spherical
  no torsion
- Wed lecture review



$$\vec{v}_Q = \vec{v}_P + \vec{\omega} \times \vec{r}_{PQ}$$

$$= \vec{v}_P + \omega_z \vec{r}_{PR}$$

$\hat{v}_Q$ dir:



$v_Q =$ 8.5

A. 0

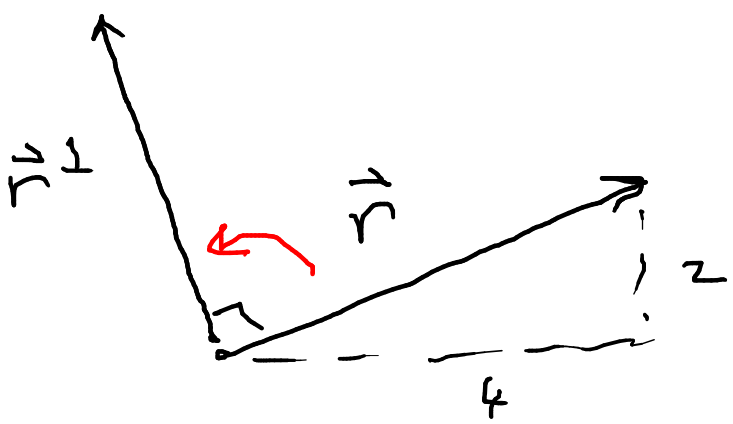
B. 3

C. 6

D. 9

E. 12 m/s

(closest)



$$\vec{r} = 4\hat{i} + 2\hat{j}$$

$$\vec{r}^{\perp} = -2\hat{i} + 4\hat{j}$$

Swap

1st negative

90° not CCW

$\vec{\omega} \times \vec{r}$

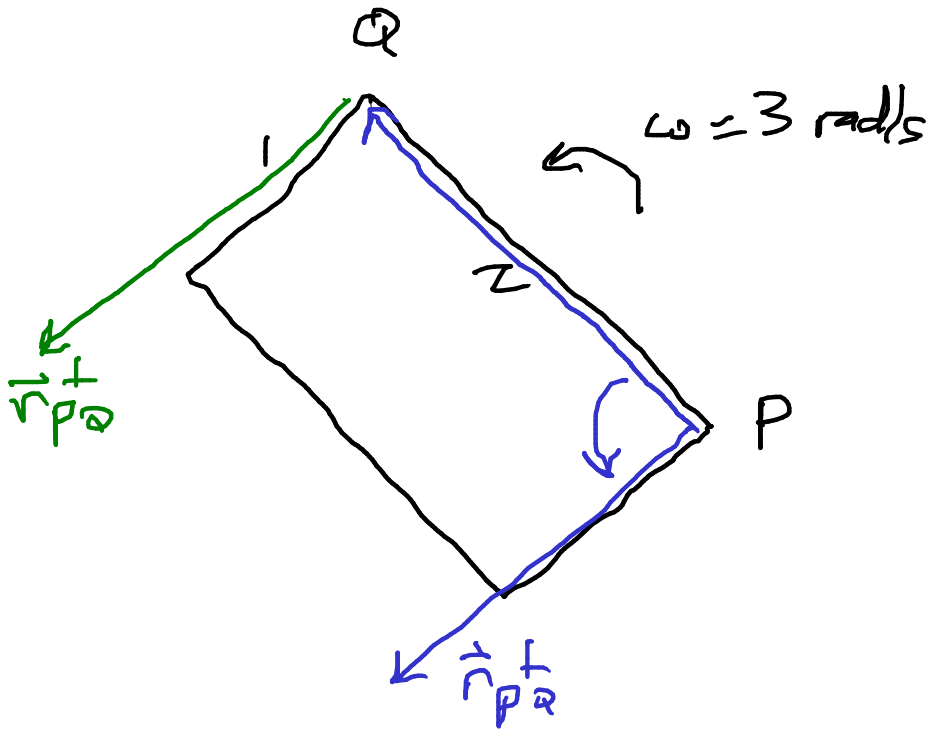
In 2D, $\vec{\omega} = \omega_z \hat{k}$

$$\vec{r} = r_x \hat{i} + r_y \hat{j}$$

$$\vec{\omega} \times \vec{r} = \underline{-\omega_z r_y}\,\hat{i} + \underline{\omega_z r_x}\,\hat{j} = \omega_z \overbrace{\left(-r_y \hat{i} + r_x \hat{j}\right)}^{\vec{r}^{\perp}}$$

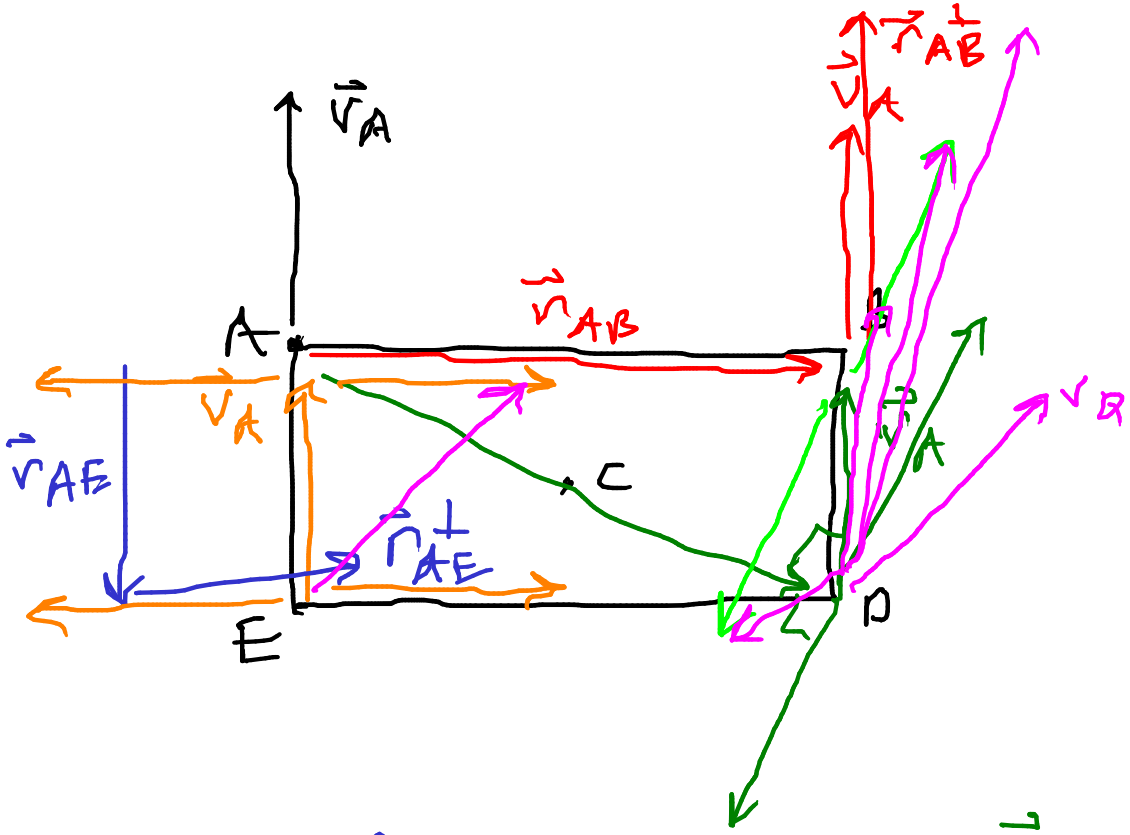
In 2D

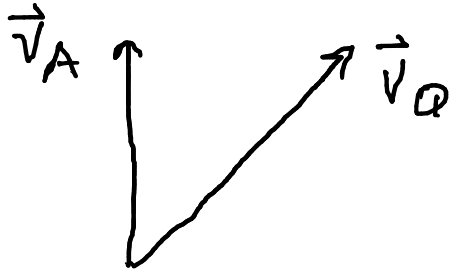
$$\vec{\omega} \times \vec{r} = \omega_z \vec{r}^{\perp}$$



$$\vec{\omega} \times \vec{r}_{PQ} = \omega_z \vec{r}_{PQ}^{\perp}$$

$$\omega_z = 3$$

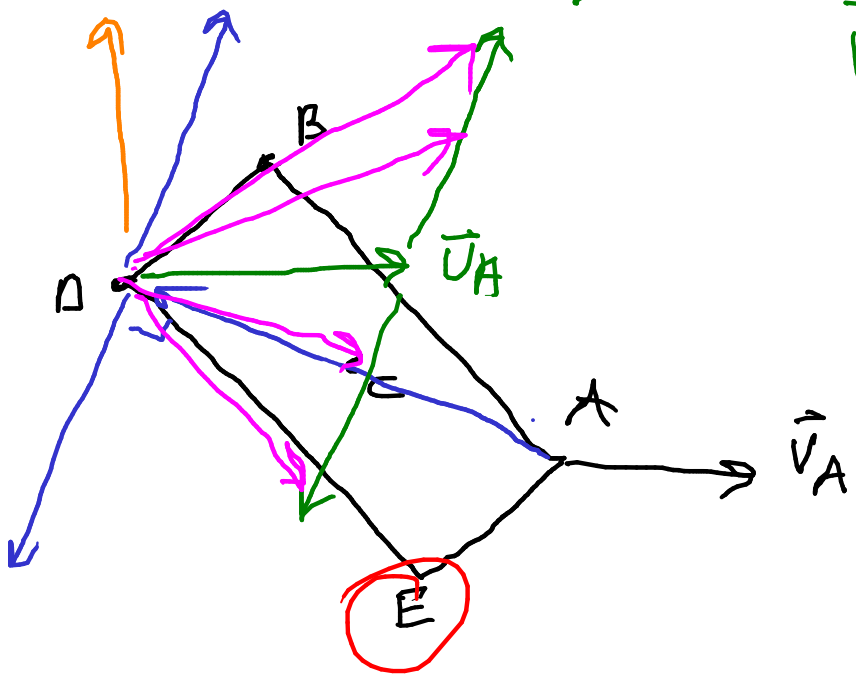




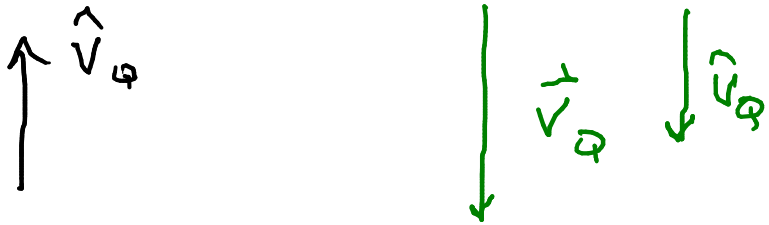
Which point is Q?

$$\vec{v}_B = \vec{v}_A + \vec{\omega} \times \vec{r}_{AB}$$

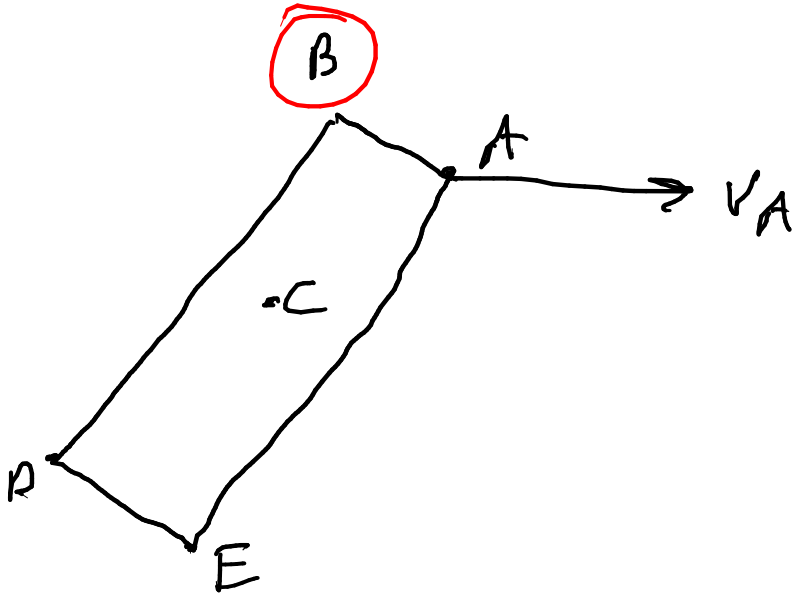
$$\omega_z \vec{r}_{AB}^{\perp}$$



$$\vec{v}_D = \vec{v}_A + \omega_z \vec{r}_{AD}^{\perp}$$



Which is Q?



which point cannot be q?

other than A.