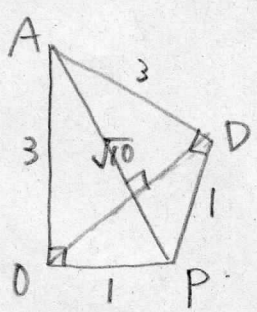


ODについて



$$\triangle OADP = \triangle OPA + \triangle DPA$$

↑ ↑
合同

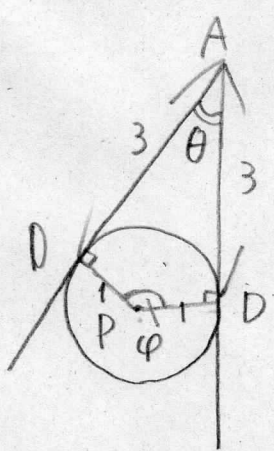
$$= 2 \triangle OPA = 2 \times 1 \times 3 \times \frac{1}{2} = 3$$

また、 $\triangle OADP = \frac{1}{2} \times AP \times OD = \frac{\sqrt{10}}{2} OD$

$$\therefore 3 = \frac{\sqrt{10}}{2} OD$$

$$\therefore OD = \frac{3\sqrt{10}}{5}$$

動画ではなく、こちらの解き方が
誘導に来ている気がします。



$\angle OAD = \theta, \angle OPD = \varphi$ とおくと、
 $\theta + \varphi = 180^\circ$

$\triangle OAD, \triangle OPD$ にそれぞれ余弦定理を
適用すると、

$$OD^2 = 3^2 + 3^2 - 2 \cdot 3 \cdot 3 \cdot \cos \theta = 1^2 + 1^2 - 2 \cdot 1 \cdot 1 \cdot \cos \varphi$$

$180^\circ - \theta$

$$\Leftrightarrow OD^2 = 18 - 18 \cos \theta = 2 + 2 \cos \theta$$

$$\therefore \cos \theta = \frac{4}{5}$$

$$\therefore OD^2 = \frac{18}{5} \quad \therefore OD > 0 \quad \therefore OD = \frac{3\sqrt{10}}{5}$$

愚直！