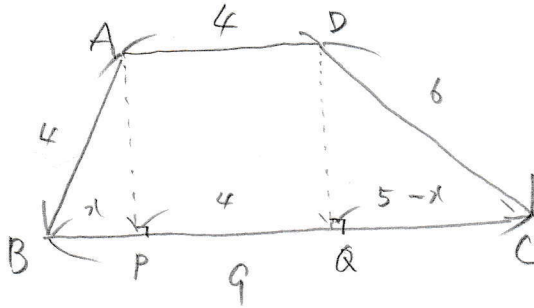


1A
三辺比?

ok

AD//BCの台形ABCDがあり, AB=4, BC=9, CD=6, DA=4である。このとき, $\cos B =$, $BD =$ となる。分数は既約分数で示せ。 [東京薬大]



BP = x とおくと

QC = 5 - x

$AP^2 = 16 - x^2$

$AP^2 = DQ^2$

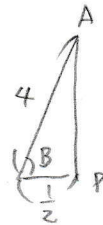
$DQ^2 = 36 - (5-x)^2$

$16 - x^2 = 36 - (5-x)^2$

$16 - x^2 = 36 - 25 + 10x - x^2$

$10x = 5$

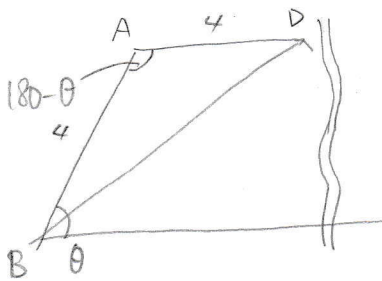
$x = \frac{1}{2}$



∴

$\cos B = \frac{\frac{1}{2}}{4} = \frac{1}{8}$

$\cos B = \frac{1}{8}$



$\angle B = \theta$ とおくと

$BD^2 = 16 + 16 - 2 \cdot 4 \cdot 4 \cos(180 - \theta)$

$BD^2 = 16 + 16 + 32 \cos \theta$

$= 16 + 16 + 32 \cdot \frac{1}{8}$

$= 36$

$BD > 0$ ∴

$BD = 6$

