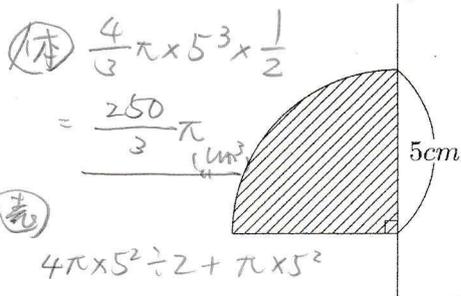


回転体 2

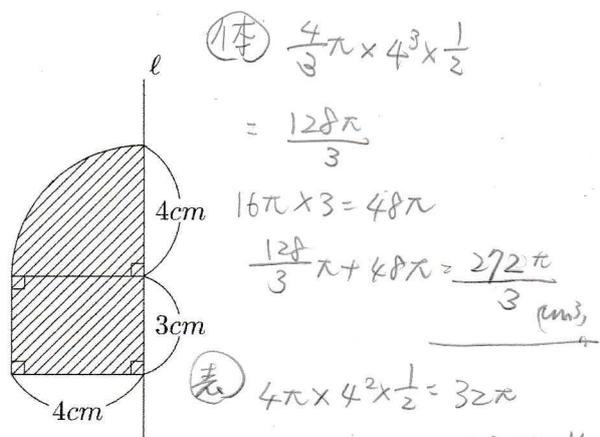
1 次の図形を線分  $l$  を軸に 1 回転させてできる立体の体積と表面積を求めなさい。ただし円周率は  $\pi$  とします。

(1)



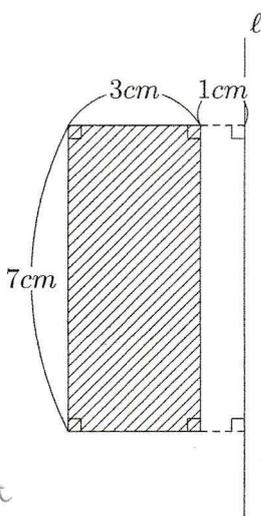
(体)  $\frac{4}{3}\pi \times 5^3 \times \frac{1}{2}$   
 $= \frac{250}{3}\pi$  (cm<sup>3</sup>)  
 (表)  $4\pi \times 5^2 \div 2 + \pi \times 5^2$   
 $= 75\pi$  (cm<sup>2</sup>)

(2)



(体)  $\frac{4}{3}\pi \times 4^3 \times \frac{1}{2}$   
 $= \frac{128\pi}{3}$   
 $16\pi \times 3 = 48\pi$   
 $\frac{128}{3}\pi + 48\pi = \frac{272\pi}{3}$  (cm<sup>3</sup>)  
 (表)  $4\pi \times 4^2 \times \frac{1}{2} = 32\pi$   
 $8\pi \times 3 = 24\pi$      $4^2 \times \pi = 16\pi$   
 $16\pi + 24\pi + 32\pi = 72\pi$  (cm<sup>2</sup>)

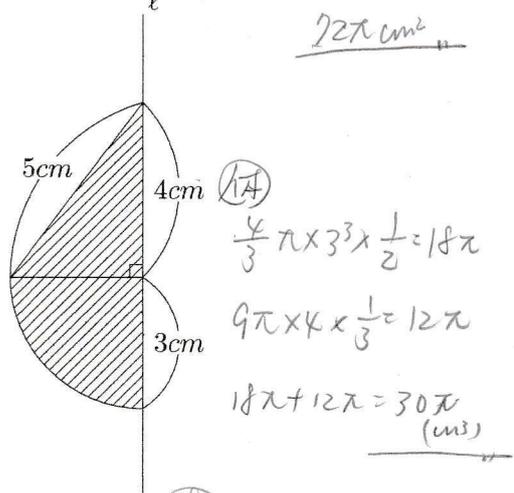
(3)



(体)  $16\pi + 7 - \pi \times 7$   
 $= 105\pi$  (cm<sup>3</sup>)

(表)  $16\pi - \pi = 15\pi$   
 $15\pi \times 2 = 30\pi$   
 $2\pi \times 7 = 14\pi$   
 $8\pi \times 7 = 56\pi$   
 $30\pi + 14\pi + 56\pi = 100\pi$  (cm<sup>2</sup>)

(4)



$\frac{192}{320}$   
 $\frac{72\pi}{320}$   
 (体)  $\frac{4}{3}\pi \times 3^3 \times \frac{1}{2} = 18\pi$   
 $9\pi \times 4 \times \frac{1}{3} = 12\pi$   
 $18\pi + 12\pi = 30\pi$  (cm<sup>3</sup>)  
 (表)  $4\pi \times 3^2 \times \frac{1}{2} = 18\pi$   
 $15\pi$   
 $18\pi + 15\pi = 33\pi$  (cm<sup>2</sup>)