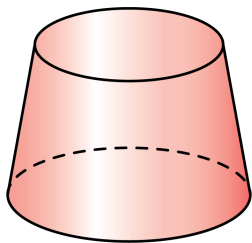
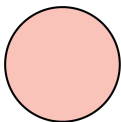


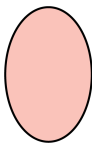
1. 다음 원뿔대를 한 평면으로 자를 때, 단면이 될 수 없는 것은?



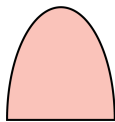
①



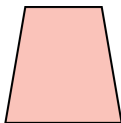
②



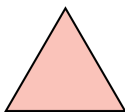
③



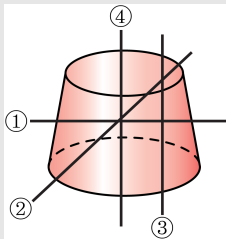
④



⑤



해설



단면이 될 수 없는 것은 ⑤이다.

2. 회전축을 포함하는 평면으로 자른 단면이 항상 원인 회전체를 말하여라.

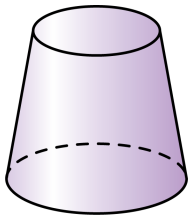
▶ 답:

▷ 정답: 구

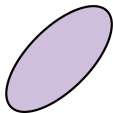
해설

구는 어느 쪽으로 잘라도 그 단면의 모양이 항상 원이다.

3. 다음 그림과 같은 원뿔대를 평면으로 자른 단면이 아닌 것은?



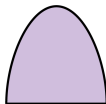
①



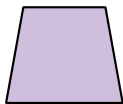
②



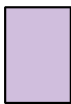
③



④



⑤



해설

①



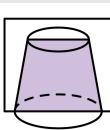
②



③

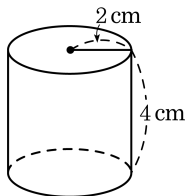


④

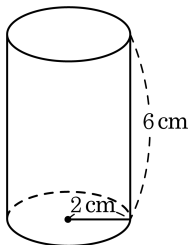


4. 다음 그림과 같은 원기둥의 부피를 구하여라.

(1)



(2)



▶ 답 :

▶ 답 :

▷ 정답 : (1) $16\pi \text{ cm}^2$

▷ 정답 : (2) $24\pi \text{ cm}^2$

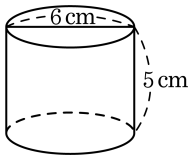
해설

$$(1) \pi \times 2^2 \times 4 = 16\pi (\text{cm}^2)$$

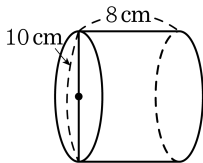
$$(2) \pi \times 2^2 \times 6 = 24\pi (\text{cm}^2)$$

5. 다음 그림과 같은 원기둥의 부피를 구하여라.

(1)



(2)



▶ 답 :

▶ 답 :

▷ 정답 : (1) $45\pi \text{ cm}^2$

▷ 정답 : (2) $200\pi \text{ cm}^2$

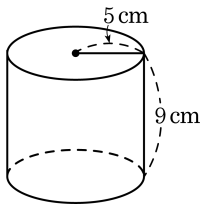
해설

$$(1) \pi \times 3^2 \times 5 = 45\pi (\text{cm}^2)$$

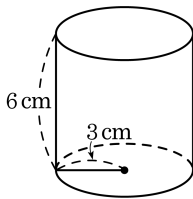
$$(2) \pi \times 5^2 \times 8 = 200\pi (\text{cm}^2)$$

6. 다음 그림과 같은 원기둥의 부피를 구하여라.

(1)



(2)



▶ 답 :

▶ 답 :

▷ 정답 : (1) $225\pi \text{ cm}^2$

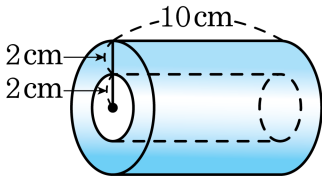
▷ 정답 : (2) $54\pi \text{ cm}^2$

해설

$$(1) \pi \times 5^2 \times 9 = 225\pi (\text{cm}^2)$$

$$(2) \pi \times 3^2 \times 6 = 54\pi (\text{cm}^2)$$

7. 다음 그림과 같은 입체도형의 부피는?



① $80\pi\text{cm}^3$

② $120\pi\text{cm}^3$

③ $144\pi\text{cm}^3$

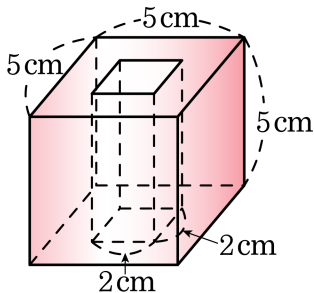
④ $152\pi\text{cm}^3$

⑤ $160\pi\text{cm}^3$

해설

$$\therefore V = \pi \times 4^2 \times 10 - \pi \times 2^2 \times 10 = 120\pi(\text{cm}^3)$$

8. 다음 그림과 같이 가운데가 비어 있는 입체도형의 부피를 구하여라.



▶ 답: cm^3

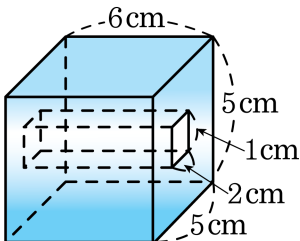
▷ 정답: 105 cm^3

해설

큰 정육면체에서 작은 직육면체의 부피를 뺀다.

$$5^3 - 2^2 \times 5 = 105(\text{cm}^3)$$

9. 다음 그림과 같이 가운데가 비어 있는 입체도형의 부피를 구하여라.



▶ 답 : cm^3

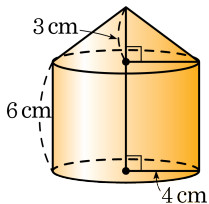
▶ 정답 : 138 cm^3

해설

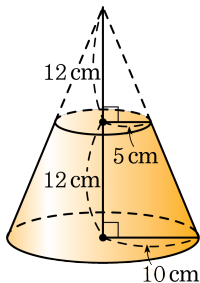
도형을 돌려서 밑면의 면적은 $5^2 - 2 \times 1 = 23\text{cm}^2$ 이고, 부피는 (밑넓이) $\times$ (높이) 이므로 $23 \times 6 = 138(\text{cm}^3)$ 이다.

10. 다음 입체도형의 부피를 구하여라.

(1)



(2)



▶ 답 :

▶ 답 :

▷ 정답 : (1) $112\pi \text{ cm}^3$

▷ 정답 : (2) $700\pi \text{ cm}^3$

해설

$$\begin{aligned} (1) & \frac{1}{3} \times (\pi \times 4^2) \times 3 + (\pi \times 4^2) \times 6 \\ & = 16\pi + 96\pi = 112\pi (\text{cm}^3) \end{aligned}$$

$$\begin{aligned} (2) & \frac{1}{3} \times (\pi \times 10^2) \times 12 - \frac{1}{3} \times (\pi \times 5^2) \times 12 \\ & = 800\pi - 100\pi = 700\pi (\text{cm}^3) \end{aligned}$$

11. 다음 입체도형의 부피를 구하여라.

(1) 밑넓이가 $40\pi \text{ cm}^2$ 이고, 높이가 5 cm 인 원뿔

(2) 밑넓이가 $36\pi \text{ cm}^2$ 이고, 높이가 8 cm 인 원뿔

▶ 답 :

▶ 답 :

▷ 정답 : (1) $80\pi \text{ cm}^3$

▷ 정답 : (2) $96\pi \text{ cm}^3$

해설

$$(1) \frac{1}{3} \times (40\pi \times 5) = 80\pi (\text{cm}^3)$$

$$(2) \frac{1}{3} \times (36\pi \times 8) = 96\pi (\text{cm}^3)$$

12. 다음 입체도형의 부피를 구하여라.

(1) 밑넓이가 $36\pi \text{ cm}^2$ 이고, 높이가 8 cm 인 원뿔

(2) 밑넓이가 $49\pi \text{ cm}^2$ 이고, 높이가 9 cm 인 원뿔

▶ 답 :

▶ 답 :

▷ 정답 : (1) $96\pi \text{ cm}^3$

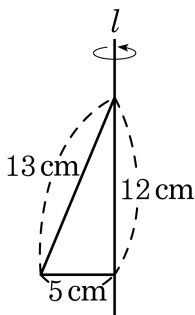
▷ 정답 : (2) $147\pi \text{ cm}^3$

해설

$$(1) \frac{1}{3} \times (36\pi \times 8) = 96\pi (\text{cm}^3)$$

$$(2) \frac{1}{3} \times (49\pi \times 9) = 147\pi (\text{cm}^3)$$

13. 다음 그림과 같이 직각삼각형을 회전하여 얻은 입체도형이다. 다음을 구하여라.



- (1) 겉넓이
(2) 부피

▶ 답 :

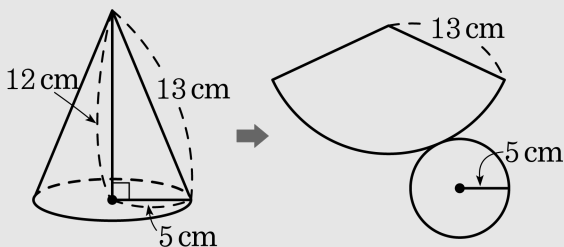
▶ 답 :

▷ 정답 : (1) $90\pi \text{ cm}^2$

▷ 정답 : (2) $100\pi \text{ cm}^3$

해설

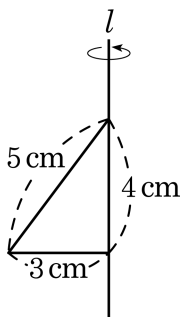
회전하여 얻은 입체도형은 원뿔이다.



$$(1) \pi \times 5^2 + \frac{1}{2} \times 13 \times 10\pi = 25\pi + 65\pi = 90\pi (\text{cm}^2)$$

$$(2) \frac{1}{3} \times \pi \times 5^2 \times 12 = 100\pi (\text{cm}^3)$$

14. 다음 그림과 같이 직각삼각형을 회전하여 얻은 입체도형이다. 다음을 구하여라.



- (1) 겉넓이
(2) 부피

▶ 답 :

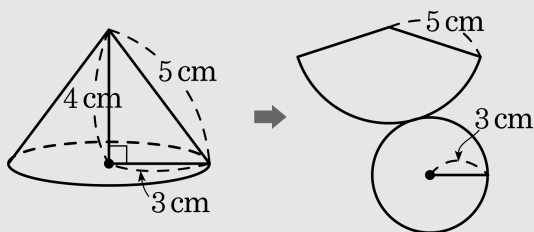
▶ 답 :

▷ 정답 : (1) $24\pi \text{ cm}^2$

▷ 정답 : (2) $12\pi \text{ cm}^3$

해설

회전하여 얻은 입체도형은 원뿔이다.



$$(1) \pi \times 3^2 + \frac{1}{2} \times 5 \times 6\pi = 9\pi + 15\pi = 24\pi (\text{cm}^2)$$

$$(2) \frac{1}{3} \times \pi \times 3^2 \times 4 = 12\pi (\text{cm}^3)$$