

Math 1351 Review #4(answers)

1. Find the area of a circle whose circumference is 2.

$$2 = 2\pi r$$

$$r = \frac{1}{\pi}$$

$$A = \pi r^2 = \pi \left(\frac{1}{\pi}\right)^2 = \boxed{\frac{1}{\pi}}$$

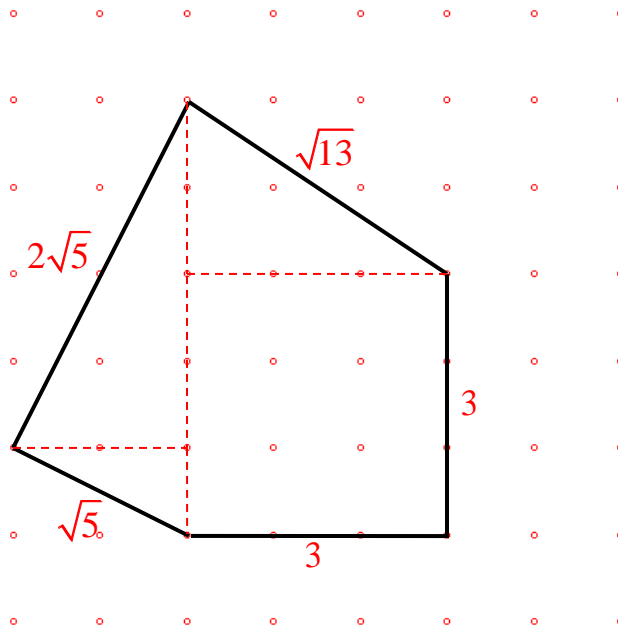
2. Find the volume of a prism whose base is a rectangle with dimensions 7.2 cm by 3.4 cm and whose height is 5.9 cm.

$$V = (7.2)(3.4)(5.9) = \boxed{144.432 \text{ cm}^3}$$

3. Find the volume of a pyramid whose base is a pentagon with perimeter 17 cm and area of 13 cm^2 and whose height is 12 cm.

$$V = \frac{1}{3}Ah = \frac{1}{3}(13)(12) = \boxed{52 \text{ cm}^3}$$

4. Find the exact perimeter of the following figure drawn in a square lattice.



$$P = 3 + 3 + \sqrt{5} + 2\sqrt{5} + \sqrt{13} = \boxed{6 + 3\sqrt{5} + \sqrt{13}}$$

5. Perform the following conversions:

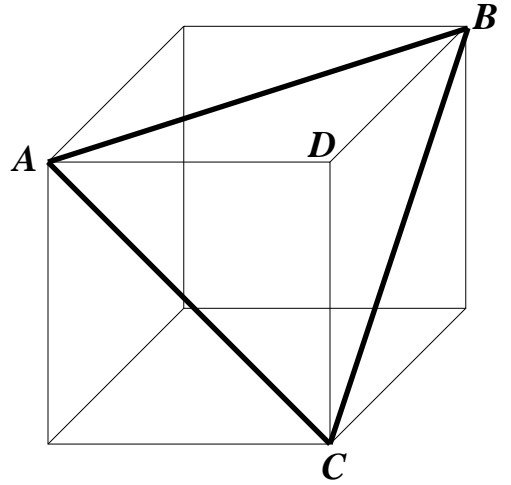
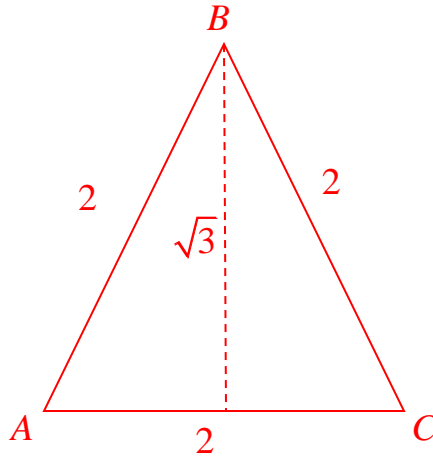
a) 1 yd = 36 in

b) 8 yd³ = 216 ft³

c) 543 cm³ = .000543 m³

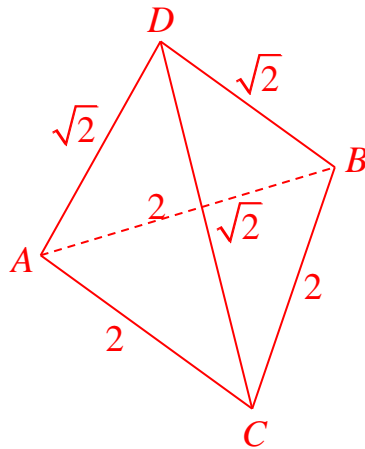
6. The cube shown has edges of length $\sqrt{2}$.

a) Find the area of $\triangle ABC$.



$$A = \frac{1}{2}bh = \frac{1}{2}(2)(\sqrt{3}) = \boxed{\sqrt{3}}$$

b) Find the surface area of pyramid $ABCD$.



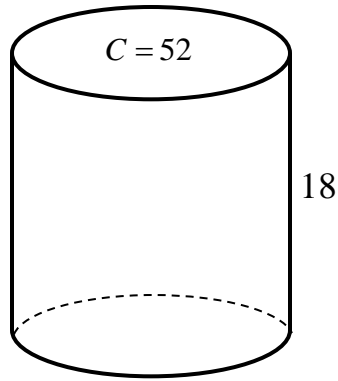
$$SA = 3 \cdot \frac{1}{2} \cdot 2 \cdot 1 + \sqrt{3} = \boxed{3 + \sqrt{3}}$$

c) Find the volume of pyramid $ABCD$.

$$V = \frac{1}{3}Ah = \frac{1}{3} \cdot 1 \cdot \sqrt{2} = \boxed{\frac{\sqrt{2}}{3}}$$

7. Find the surface area and volume of the following solids.

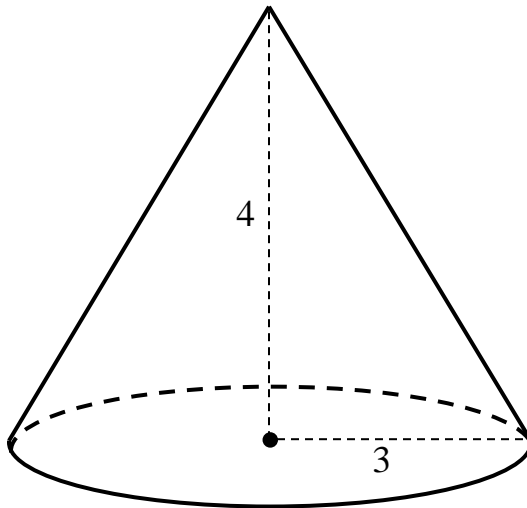
a) right circular cylinder



$$SA = 2 \cdot \pi \left(\frac{26}{\pi} \right)^2 + 18 \cdot 52 = \frac{1352}{\pi} + 936$$

$$V = \pi \left(\frac{26}{\pi} \right)^2 \cdot 18 = \frac{12168}{\pi}$$

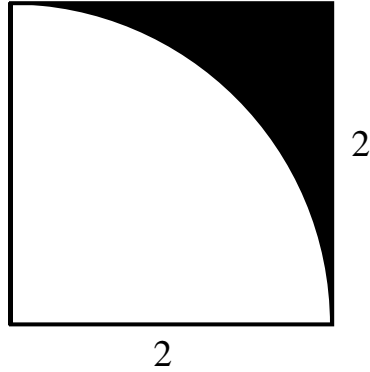
b) right circular cone



$$SA = \pi (3)^2 + \pi \cdot 3 \sqrt{4^2 + 3^2} = 24\pi$$

$$V = \frac{1}{3} \pi (3)^2 \cdot 4 = 12\pi$$

8. Find the area of the shaded region in the following figure. The quadrilateral is a square, and the arc is a portion of a circle of radius 2 with its center at the lower left vertex of the square.



$$A = 2^2 - \frac{1}{4}\pi(2)^2 = \boxed{4 - \pi}$$

9. Use the Triangle Inequality to determine if the following sets of lengths could be used to build a triangle.

a) $\{1, 7, 6\}$

$$1 + 6 = 7, \boxed{\text{No}}$$

b) $\{1, 7, 7\}$

$$1 + 7 > 7, 7 + 7 > 1, \boxed{\text{Yes}}$$

c) $\{1, \sqrt{2}, \sqrt{6}\}$

$$1 + \sqrt{2} < \sqrt{6}, \boxed{\text{No}}$$

10. List the following from smallest to largest:

i) the perimeter of a square with 6 cm sides

ii) the perimeter of a rectangle with one side of 7 cm and another side of 6 cm

iii) the perimeter of a triangle with one side of 7 cm and another side of 5 cm

$i) = 24 \text{ cm}, ii) = 26 \text{ cm}, iii) < 24 \text{ cm}$, so the correct order is iii), i), ii).