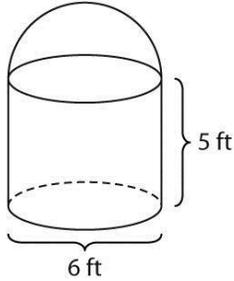


## Midterm Review Integrated 3 Short Response

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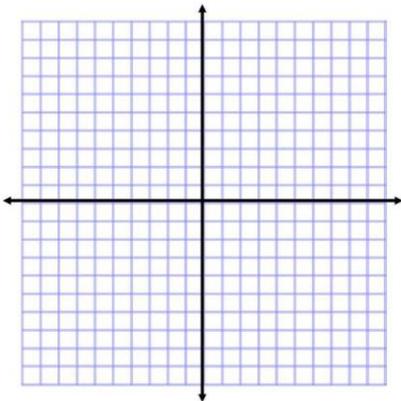
1. A company sells several sizes of the same design of trash cans. The trash cans consist of a cylinder and a hemisphere. The smallest size trash can has the dimensions shown.



What is the volume of the trash can?

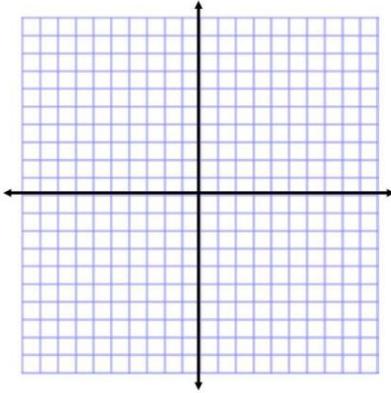
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2. Is the triangle with vertices  $A(-2, -2)$ ,  $B(1, 4)$ , and  $C(4, -5)$  isosceles? Explain/Show.



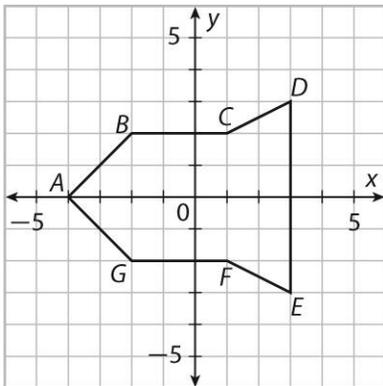
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3. Three vertices of quadrilateral  $ABCD$  are  $A(-5, 5)$ ,  $B(0, 0)$ , and  $C(7, 1)$ . What are the coordinates of the fourth point such that the quadrilateral is a rhombus?




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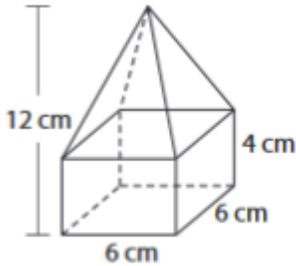
4. What is the perimeter of the figure?




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5. A right cone has a slant length of 22 centimeters and a radius of 14 centimeters. What is the surface area of the cone?

6. What is the surface area of the composite figure of a square pyramid on top of a cube?



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7. The dimensions of the triangle are decreased by a scale factor of  $\frac{1}{3}$ . What is the area of the resulting triangle compared to the original?

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8. The density of a steel ball is 16 grams per cubic centimeter. What is the mass of a steel ball with radius 4 centimeters?

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9. The territory of a town can be modeled by a rectangle with dimensions 12 miles and 7 miles. If the town has a population of 28,500, what is its population density? Round to the nearest person.

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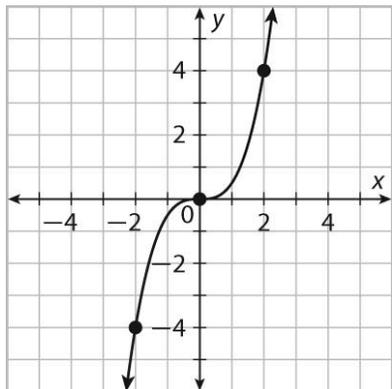
10. Use the Binomial Theorem to expand  $(x + 6)^4$ .

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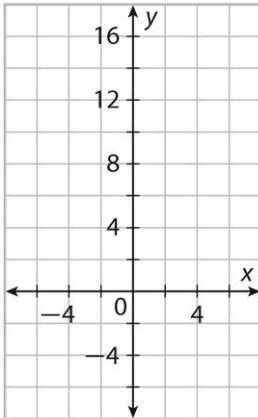
11. Use synthetic division to determine all factors of  $p(x) = x^3 - 4x^2 - 25x + 100$ , given that  $x - 4$  is a factor.

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12. Draw the graph if the function shown below is translated 2 units left and 1 unit down. Draw and label the reference points on the curve that you draw.



13. Sketch the graph of  $f(x) = -x^2(x + 4)(x - 2)$



**Write the simplest polynomial function with the given zeros.**

14.  $4, -3i$

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**Solve the polynomial equation by finding all real roots.**

15.  $g(x) = x^3 - x^2 - 10x - 8$

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