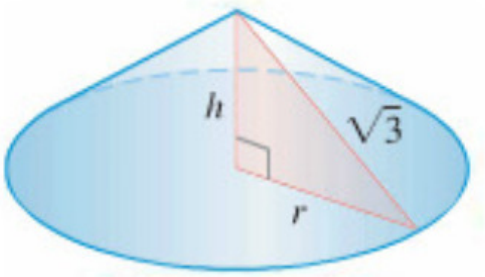
Math 103 - Rimmer Name _____

Hw # 10 Recitation _____

Spring 2012

10. A right triangle whose hypotenuse is $\sqrt{3}$ m long is revolved about one of its legs to generate a right circular cone. Find the radius, height, and volume of the cone of greatest volume that can be made this way.



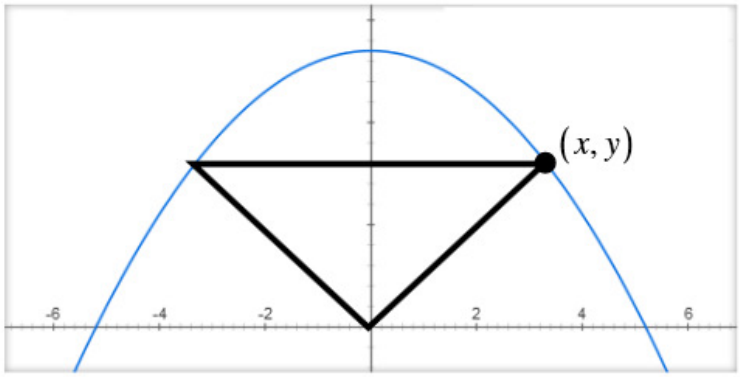
Math 103 - Rimmer Name _____

Hw # 10 Recitation _____

Fall 2011

10. An isosceles triangle has its vertex at the origin and its base parallel to the x-axis with vertices above the x-axis on the curve $y = 27 - x^2$. Find the largest area the triangle can have.

A) 40 unit^2
B) 42 unit^2
C) 48 unit^2
D) 50 unit^2
E) 54 unit^2
F) 56 unit^2
G) 60 unit^2
H) 64 unit^2



Math 103 - Rimmer Name _____

Hw # 10 Recitation _____

Spring 2011

10. Jack wishes to construct a cylindrical barrel with a volume of 32π ft^3. The cost per square foot of the material foe the side is \$ 3 and the cost per square foot for the material for the top and bottom is \$ 6. Find the height of the barrel that can be constructed at a minimum cost.

A) $h = 2$ ft. B) $h = 3$ ft. C) $h = 4$ ft. D) $h = 6$ ft.

E) $h = 8$ ft. F) $h = 10$ ft. G) $h = 12$ ft. H) $h = 16$ ft.

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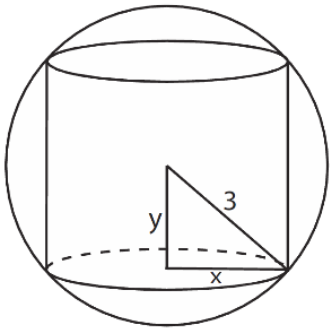
Fall 2010

13. A right circular cylinder is inscribed in a sphere of radius 3 cm. Find the largest possible volume of such a cylinder.



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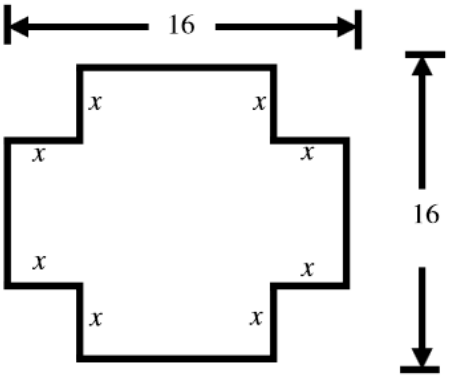
Hw # 10 Recitation _____

Spring 2010

16. An open box is made from a 16 inch × 16 inch piece of cardboard by cutting equal squares from each corner and folding up the sides. For maximum volume, what size squares should be cut out?



Math 103 - Rimmer Name _____

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Spring 2009

12. On open rectangular box has one side of its base 4 feet long and is to have a volume of 200 cubic feet. Find the dimensions for which the amount of material needed to construct the box is as small as possible.

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Answers:

Spring 2012 # 10 : $h=1,\ r=\sqrt{2},\ V=\frac{2\pi}{3}$

Fall 2011 # 10 : E

Spring 2011 # 10 : E

Fall 2010 # 13 : $12\pi\sqrt{3}\ \text{cm.}^3$

Spring 2010 # 16 : $\frac{8}{3}\times\frac{8}{3}$ in. squares

Spring 2009 # 12: 10' X 4' X 5'