Name _____ Date _____

PROBLEM SET 2: Exploring Cubic Functions

Complete each table. Include an expression for the volume. Circle the relative maximum or minimum, if there is one.

1

Height of Box (in.)	Width of Box (in.)	Length of Box (in.)	Volume of Box (cu. in.)
0	8	10	0
1	8 – 2(1) = 6	10 – 2(1) = 8	(1)(6)(8) = 48
1.5	8 – 2(1.5) = 5	10 – 2(1.5) = 7	(1.5)(5)(7) =52.5
2	8 – 2(2) = 4	10 – 2(2) = 6	(2)(4)(6) = 48
3	8 – 2(3) = 2	10 – 2(3) = 4	(3)(2)(4) = 24
4	8 – 2(4) = 0	10 – 2(4) = 2	(4)(0)(2) = 0
h	$8 - 2h$	$10 - 2h$	$h(8 - 2h)(10 - 2h)$

2

Radius of Cylinder (in.)	Height of Cylinder (in.)	Base Area of Cylinder (sq. in.)	Volume of Cylinder (cu. in.)
0	0	0	0
–1			
1			
2			
3			
4			
r	$3r$	$3.14r^2$	

3

Height of Cube (cm)	Width of Cube (cm)	Length of Cube (cm)	Volume of Cube (cu.cm)
–2			
0			
1			
3			
5			
			1000
s			

4

Width of Tank (m)	Height of Tank (m)	Length of Tank (m)	Volume of Tank (cu. m)
10			
20			
30			
			58,682
40			
50			
w	100 – 2*w*	3*w* – 50	

5

Height of Square Pyramid (ft)	Side of Base Length (ft)	Area of Base (sq. ft)	Volume of Square Pyramid (cu. ft)
–4			
0			
3			
6			
9			
12			
p	$\frac{1}{2}p$	$\frac{1}{4}p^2$	

6

Length of Base (dm)	Height of Base (dm)	Length of Triangular Prism (q. dm)	Volume of Triangular Prism (cu. dm)
–0.5			
0			
0.3			
0.5			
			5
2	4		
b		$10b - 5$	