SHARP

Worksheet 28: Revision Term 3

Grade 9 Mathematics

1. For the following functions:

   i) State the rule in words.

   ii) Write out an equation for the pattern.

   iii) And find the missing values in the table.

   a)

x	1	2	3	4	7		
y	1	4	9			100	225

   b)

m	0	1	2	7	9		
n	-5	-1	3			51	87

   c)

s	1	2	3	4	6		
t	54	36	24			$2\frac{26}{243}$	$\frac{4096}{6561}$

2. Simplify the following expressions:

   a) $(x^2 + 3x + 5)(4x) - 7x(8x - 7)$

   b) $\frac{9x^4+21x^2+6}{3x^2}$

   c) $(x + 5)^2$

   d) $(4x + 3)(3x - 4) - 5x(7x + 8)$

   e) $(7x)^2 + \sqrt{25x^4} - \sqrt[3]{64x^9}$

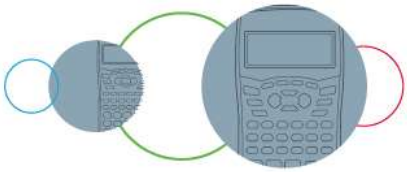
   f) $(2x - 3)(2x + 3)$

   g) $\frac{72xy^3-48x^2y^2+60x^3y}{12xy}$

   h) $3x(4x^2 - 7x + 12) - (2x - 1)(3x + 7)$

   i) $(7x - 8)^2$

   j) $(9x + 1)^2 - 3x(4x + 3)$



3. Factorize the following expressions completely

a) $12x^2 + 15x$

b) $9x^2 - 25y^2$

c) $x^2 + 10x + 24$

d) $45x^2y - 15xy^2 - 5xy$

e) $x^2 + 8x + 15$

f) $x^2 + 11x + 18$

g) $81x^5y^3 - 64x^3y^5$

h) $3x^2 + 33x + 90$

i) $72a^5b^5 - 98a^3b$

j) $-5x^3 - 110x^2 - 600x$

4. Find the value for each of these expressions by substituting in the given values:

a) $4ab - 5c + 7d^2$ $a = 8,\ b = 7,\ c = -3\ and\ d = -1$

b) $3dc^2 + 5b - 7a$ $a = 0,\ b = -6,\ c = 4\ \ and\ d = -5$

c) $\frac{4a^2bc}{d}$ $a = -1,\ b = 7,\ c = -7\ and\ d = -3$

d) $4(5ac - 5b) + 2d^2$ $a = -3,\ b = -1,\ c = -9\ and\ d = -2$

e) $\sqrt{4a^2 + 5b}$ $a = -1$ and $b = 1$

5. Given the expression: $4x^5 + 6x^2 - 7x - 9$

a) How many terms are in the above polynomial?

b) What is the degree of the expression?

c) What is the coefficient of x?

d) What is the constant term?

e) If $x = -1$ find the value of the above expression.

6. Solve for x:

a) $3x + 7 = 5$

b) $x^2 + 21x + 108 = 0$

c) $ax + b = c$

d) $x^2 - 16 = 0$

e) $3^x + 1 = 10$

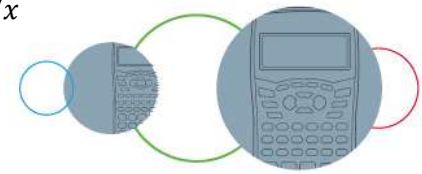
f) $x^4 + 5 = 21$

g) $-2x^2 - 16x - 14 = 0$

h) $3x^2 - 27 = 0$

i) $\frac{3x}{4} - 1 = 5$

j) $x^2 + 10 = -7x$

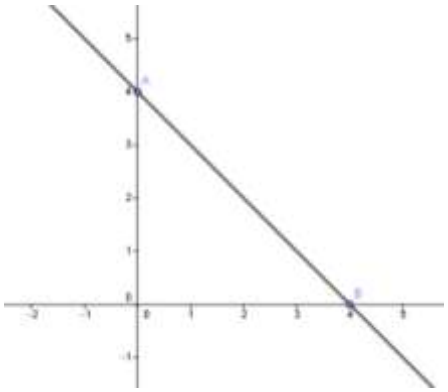


7. Say whether the following graphs are

   i) linear or non-linear

   ii) increasing, decreasing or constant

a)



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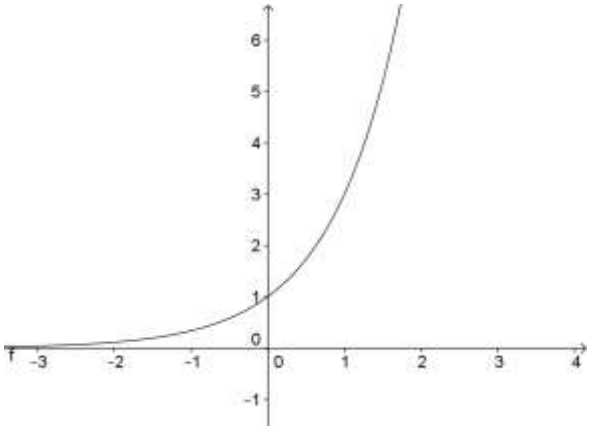
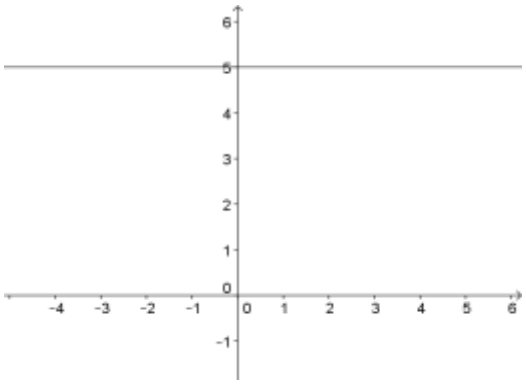
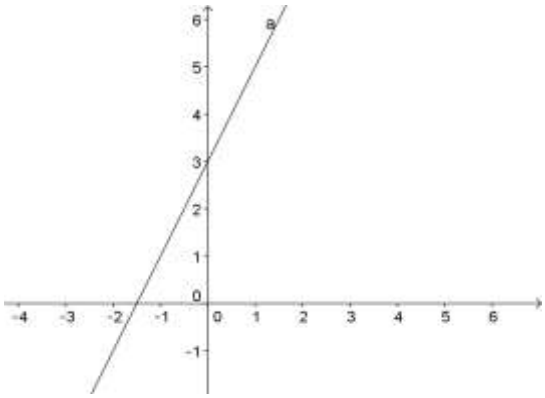


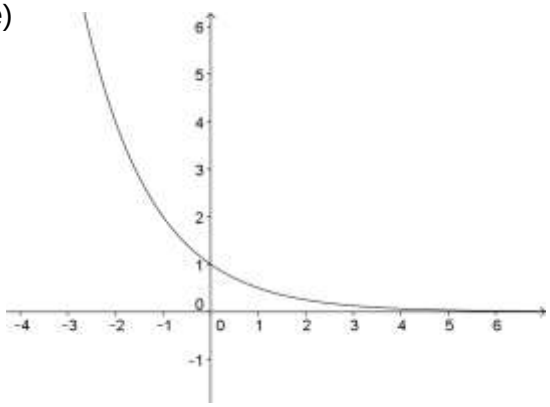
c)



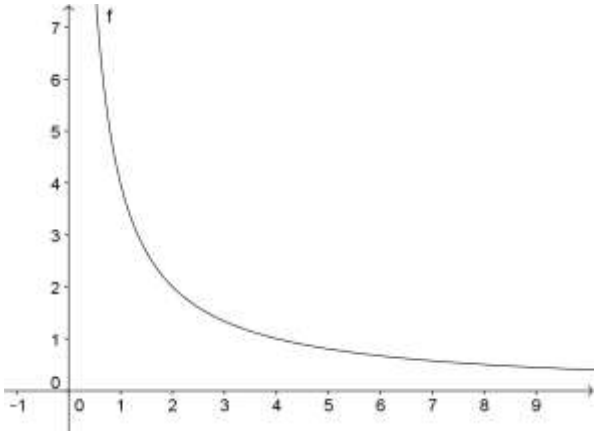
d)



e)



f)

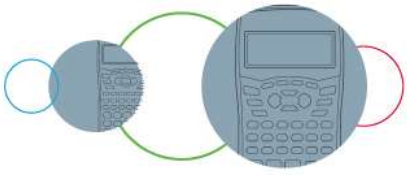


8. For each of the following graphs

   i) Give the gradient and the y-intercept

   ii) Find the x-intercept

   iii) Sketch the graph on a new set of axes.



a) $y = 3x + 5$

b) $y = -2x + 3$

c) $y = -9x + 8$

d) $y = 6$

e) $3y + x = 6$

f) $x = 2y + 7$

g) $y = 8x + 6$

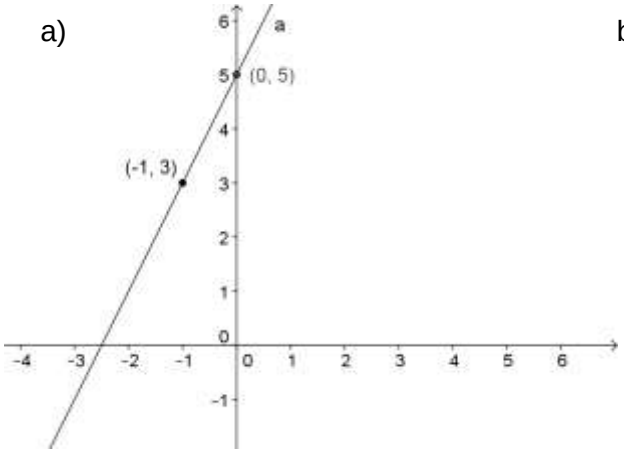
h) $5y - 2x = 10$

i) $3x = 2y$

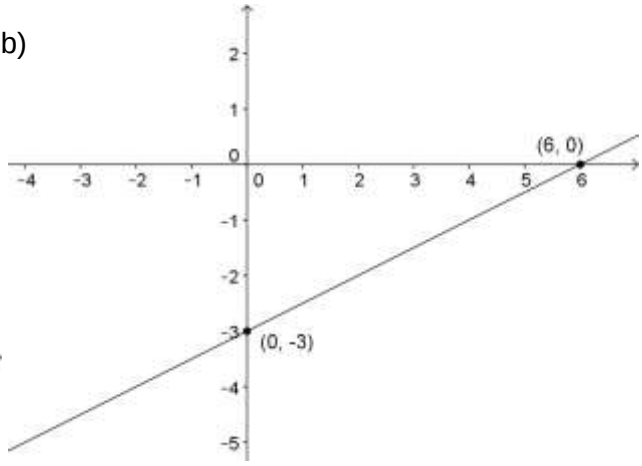
j) $-3y = 6x + 9$

9. Find the equations for the following graphs:

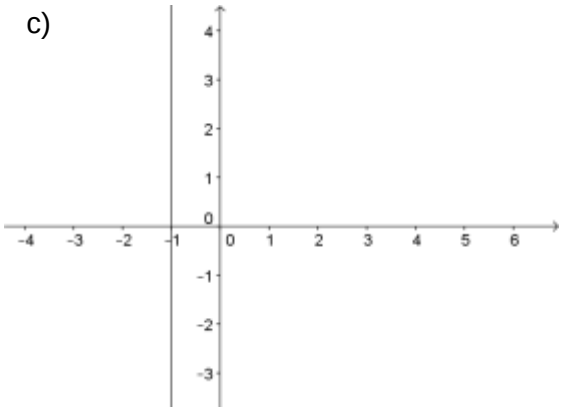
a)



b)



c)



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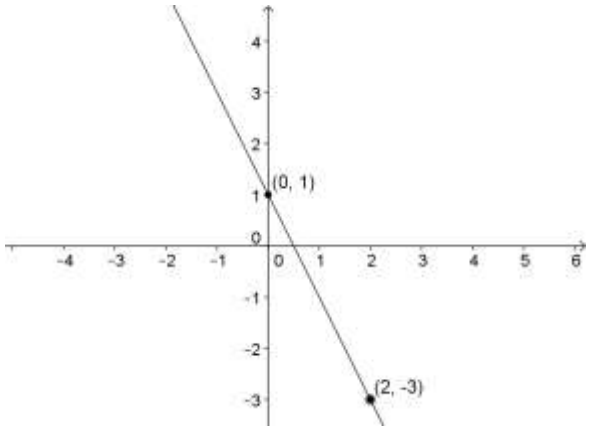

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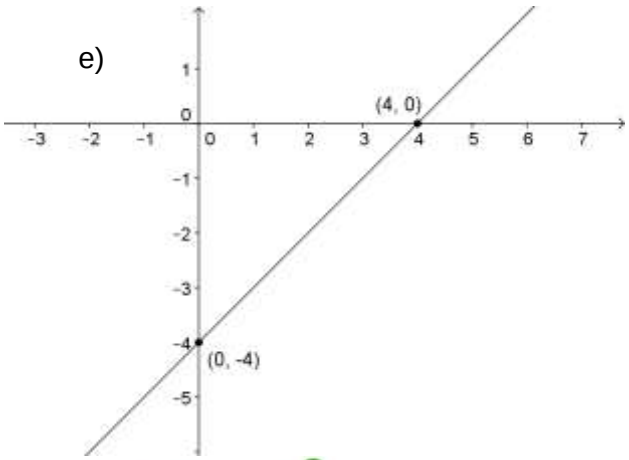

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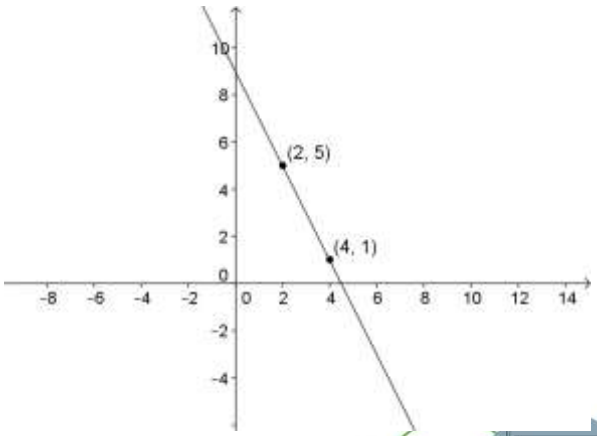
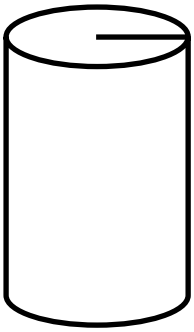


10. Find the surface area and volume for each of these 3D objects.

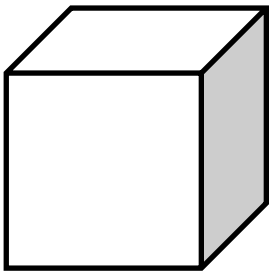
a)



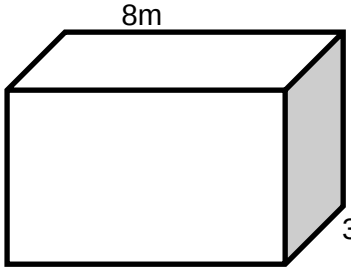
r = 5cm

h = 15cm

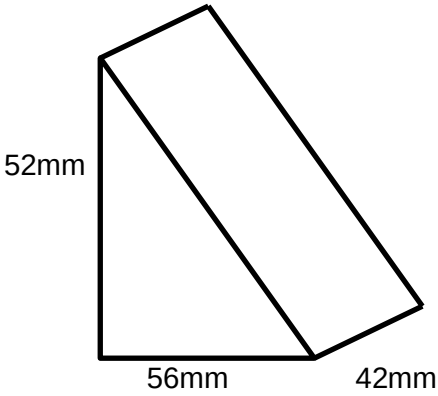
b) all sides = 28mm



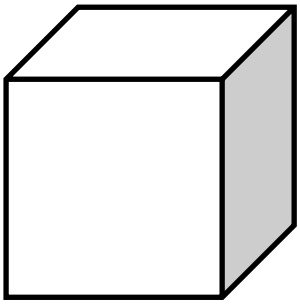
c)



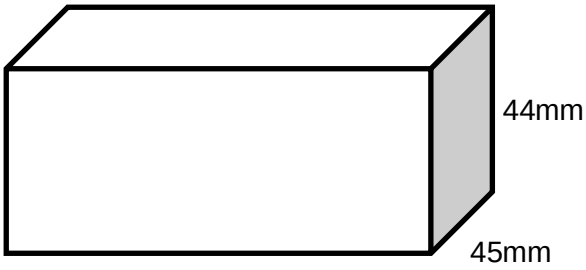
d)



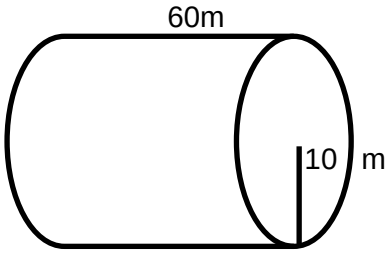
e) all sides = 82cm



f)



g)



h)