SECTION A

1. 2x2+ x-3

4x2 -9

2x2 +3x – 2x – 3

X(2x +3) -1(2x +3)

(2x+3) (2x-1)

4x2 – 6x + 6x -9

Thus (4x2-9) can be written as (2x+3) (2x+3)

(x-1) (2x +30

(2x +3) (2x+3)

= x - 1

 2x -3

1. Volume = L x w x h

3.2m x 2.5m x 2m

=1600m3

1m3=10001

1600m3=x

M31600 x 1000L = 1,600,000

 1m3 250

 =6400 MINUTES

1. $log \_{n}^{n}$= 1 since log A + logB =AB

$log \_{3}^{3}$= 1 log A-log B=$\frac{A}{B}$2a+8=6

 9

$log\_{3}^{(2a+8)}log\_{3}^{9}$ = 1+$log\_{3}^{2}$ 6a = 2a +8

 4a=8

$log\_{3}^{(2a+8)}$ - $log\_{3}^{3}$ + $log\_{3}^{2}$ a=2

Log 3 2a+8= $log\_{3}^{6}$

 9

1. 8.5 x 8.5 x 3.25 = 234.8125 cm3 (Greatest)

7.5 x 7.5 x 3.15 = 177.1875cm3

8x8x3.2=204.8cm3

-234.8125cm 204.8cm3

204.8 -177.1875cm

 27.6125cm3

30.01cm3

30.01cm greatest

1. q=2a-3b+2c

a=$\frac{3}{2}$ b=$\left(\frac{4}{-3}\right)$ c$\left(\frac{0}{4}\right)$

2$\left(\frac{3}{2}\right)$ - 3$\left(\frac{4}{-3}\right)$ +2$\left(\frac{0}{4}\right)$

6-12 + 0=$\left(\frac{6}{21}\right)$



X2 x y2

62 + 212



36 + 441

1. 3(2$\sqrt{3 }$ + 32)

2$\sqrt{3}$ - $\sqrt{2)}$ (2$\sqrt{3}$ + $\sqrt{2)}$ 6 $\sqrt{3}$ + 3 $\sqrt{2}$

 10

6$\sqrt{3 }$ + 3 $\sqrt{2}$6$\sqrt{3}$ + 3 $\sqrt{2}$

12 + 2 $\sqrt{6}$ - 2$\sqrt{6 }$ - 2 10 10

1. QU.RU=SU.TU

(11x6)=(x+4)4 m1

66 = 4x +16

50=4x

X=$\frac{50}{4}$ m1

=12.5

SU=12.5 +4 A1

=16.5

1. Hire purchase price .Down payment =200 m1

Installment = 6x250= 1500

 1700m1

=1700

 1560

 140

1. P=a$\sqrt{x^{2}}+ b^{2}$



$\left(\frac{py}{a}\right)$2 = ($\sqrt{x^{2}}$ + b2)2 m1

P2y2= x2 + b2 m1

 a2

x2=P2y2- b2

 a2

 m1

x= P2y2 - b2

 a

1. Q=-7

d=4

nth term = a +(n-1)d

= -7,-3,1,5,9,13,17 m1

Sum = $\frac{n}{2}$(2a + (n-1) d )

$\frac{30}{2}$ (2(-7) + (30 -1) 4)

15(-14 +116)

= 15x102

=1530

1. 

Volume of cone=⅓$π$r2

160cm3 =⅓ x$\frac{22}{7}$ x r2  x 8

r2=$\frac{160 x 21}{22x 8}$

r2=

1. 2x – 3y + 6=0

3y=2x +6

 Y=$\frac{2}{3}$x + 2

Gradient, m =tan (180-$θ$) = $\frac{2}{3}$ B1

180-$θ$ = tan ($\frac{2}{3}$)

180-$θ$=33.70  B1

$θ$=180-33.7

$=146.3$0

1. A=P(1+$\frac{r}{100}$)n

79692.42 = 50,000(1+ $\frac{r}{400}$)2x4

$\frac{79692.42}{50000}$ = (1+ $\frac{r}{400}$)8 m1

1.593=(1+ $\frac{r}{400}$)8

$\sqrt[8]{1.5938}$= (1+ $\frac{r}{400}$)

1.06=(1+ $\frac{r}{400}$) m1

$\frac{r}{400=}$0.06

R=0.06x 400

=24% A1

1. $<$CBT = $<$ BCT=$\frac{360}{5}$ B1

$=72$0 B1

$<$BTC =180-(72x2) m1

$$=180-144$$

$=36$0 A1

1. $\frac{2}{9.072 x 10 }$ + $\sqrt[3]{20.7726}$ - (26.43 x 10-2)½  20.713

 20.571

=(0.1079 x 10 x 2) + (2.749) – (5.1410) M1 0.202

 0.1381

1.079 1.158 29

X 22.749 0.1410

1.158 3.907-5.1410 m1

1. Men hours days

5 6 8

3 8 - B1

$\frac{5}{3}$ x $\frac{6}{8}$ x 8 m1

=10 days A1

1. (i) Taxable income =$(\frac{115}{100}$ x 15,200)= 1050

 = 17480-1050

 =16,630 m1

k£ $\frac{16,430 x 12}{20}$ = 9858k£ m1

ii) 3630 x 2=7260 m

 3630 x 3=10980

 2598 x 4=10392

Total tax per month =$\frac{28,542}{12}$

 =ksh.2378.50 B1

iii) Ne tax = 2378.50 – 450 m1

 =ksh.1928.50 A1

Iv) Net salary = 15,200-1928.50 -1050 m1

 =12,221.50 A1

1. (a) Det(4x2)-(3x3)=-1 B1

$\left(-2 3 3 -4 \right)$ B1

(b) 20x + 15y =9500 B1

i)30x + 20y = 13,500 B1

Divide by 5

ii)$\left(\frac{x}{y}\right)$=$\left(-2 3 3 -4 \right)\left(\frac{1900}{1350}\right)$ m1

ii)$\left(\frac{x}{y}\right)$ = $\left(\frac{250}{200}\right)$ m1

c)$\frac{110}{100}$x 250 = sh.275 m1

 90/100 x 200 = sh.180 m1

$\left(20 15 15 20 \right)\left(\frac{215}{180}\right)$=$\left(\frac{8200}{11,850}\right)$

=8200+11,850

Sh.20.050

1. Original price=sh 340,000

No of ratio=x

Cost of each radio=sh.340,000

 X

New no of radios = x-30

New price of radio=340,000

 x-30 B1

340,000 + 300 = 340,000

 X x-30 B1

340,000 + 300x = 340,000 m1

 x-30 m1

340,000(x-30)+ 300x(x-30) = sh.340,000 m1

3400x – 102,000 + 3x2- 90 x=3400 x

3x2-9x – 102,000 = 0 m1

X2- 30x-34000=0

P=3400

S=-30

X2-200x+170x-34000=0 m1

X(x-200) + 170(x-200)=0 B1

(x+170) (x-200)=0 A1

X=200

New price of radio=340,000 A1

 170

 = sh.2000 m1

 

1. $<AED=180-60 $

=1200 opposite angles of a cycle quadrilateral

$<$BAD = 500(Alternate segment theorem)

$<$ DCB =180-(1100+500)

=200(internal angles of a triangle add up to 1800)

Area of triangle =½ab sin 1100

=½ x 3 x 5 x sin 1100

 = 21.14cm2

1. (a) P= $\frac{kq}{r^{2}}$ m1

q=$\frac{k(12)}{144}$

k=$\frac{144 x 9}{12}$ m1

=108

P=$\frac{108q}{r^{2}}$ = $\frac{\left(108\right)(15)}{5^{2}}$ A1

P=64.8

b)P=$\frac{kq}{r^{2}}$

 q=$\frac{pr^{2}}{108}$ B1

(c)q= $\frac{1.2 p x (0.9r^{2})}{k}$ m1

=$\frac{0.972pr^{2}}{k}$ m1

$\frac{0.972pr^{2}}{k}$ - $\frac{pr^{2}}{k}$

$=-$0.028 $\frac{pr^{2}}{k}$ A1

% = 0.028 x 100

=-2.8% or reduction by 2.8%

1. (a) a,a+2d, a +5d

$\frac{a+2d}{a}$ = $\frac{a+5d}{a+2d }$ = r B2

(a+2d)2=a(a+5a)

a2 + 4ad + 4d2 = a2 + 5ad

 4d2= 5ad-4ad

$\frac{4d^{2}}{d}$ = $\frac{ad}{d}$
$$a=4d$$

r=$\frac{a+2d}{a }$ m1

r=$\frac{6d}{4d}$ m1

r=1.5

(b)(i) Sn = $\frac{n}{2}$ $\left(2a+\left(n-1\right)a\right)$

$\frac{20}{2}$ (2(16) + (20-1) 4) m1

10(32+76) A1

10(108)

=1080

ii) $\frac{16 (1.5^{20}- 1)}{1.5-1}$ = 106.376.2154 A1

1. (a) $a^{2}$ = $b^{2}$ +$c^{2}$ - 2bc cos A

Cos A= $\frac{b^{2} c^{2 }a^{2}}{2bc}$

= 102+ 82- 72 A1

 2x10x8

=44.050

(b) $\frac{7}{sinsin 44.05 }$ 2R

R=$\frac{7}{2sinsin 44.05 }$ A1

=5.034

c) Area of sector $\frac{88.1}{360}$ x 3.142 x 5.0342

 = 19.49cm A1

 =$½$ x 5.0342 x sin 88.1 m

=12.66cm2 A1

Shaded area=19.49-12.66 m

 = 6.83cm2A1

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