MAP4C Mid Term Review

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1 Introduction

UNIT 1-ALGEBRA:

$a.)(p-4)(p+5) = p^2+p-20$
$b.)(n+8)(n+2) = n^2+10n+16$
$c.)(m+3)(m-7) = m^2-4m-21$
$d.)(w-4)(w-6) = w^2-10w+24$
$e.)(2x-3)(5x-4) = 10x^2-23x+12$
$f.)(y-5)(2y+9) = 2y^2-y-45$
$g.)(3a+1)(4a+1) = 12a^2+7a+1$
$h.)(7-x)(4+x) = 28+3x-x^2$
$i.)(x-6)(x+6) = x^2-36$
$j.)(x+2)^2 = x^2+4x+4$
$k.)(y+11)(y-11) = y^2-121$
$l.)(z-5)^2 = z^2-10z+25$

$2.)4(x-2)(3x-5) = 12x^2-44x+40$
$b.)(4x-3)^2-5(3x^2-5x+7) = 16x^2-12x-12x+9-5(3x^2-5x+7) = x^2+x-26$

$3.)(2x-5)(x+1) = 2x^2-3x-5$
$b.)(4x-1)(8x+3)5x(2x-1) = 32x^2+12x-8x-3+10x^2-5x = 42x^2-x-3$

$4.)18-12x = 6(3-2x)$
$b.)21w^2-28w+35 = 7(3w^2-4w+5)$
$c.)24x^2+16x = 8x(3x+2)$
$d.)15a^3-20a^2+25a = 5a(3a^2-4a+5)$
$e.)20m^2-30m = 10m(2m-3)$
$f.)27k^3-36k^5 = 9k^3(3-4k^2)$
$g.)n^2-144 = (n+12)(n-12)$
$h.)81-x^2 = (9+x)(9-x)$
$i.)5m^2-80 = 5(m+4)(m-4)$
$j.)10x^2-90 = 10(x+3)(x-3)$
$k.)x^2+5x+6 = (x+2)(x+3)$
$l.)a^2-a-30 = (a+5)(a-6)$

$m.)x^2 + 3x - 10 = (x-2)(x+5)$
$n.)m^2 - 9m + 20 = (m-4)(m-5)$
$o.)x^2 + 6x - 27 = (x-3)(x+9)$
$p.)3x^2 - 6x - 105 = 3(x+5)(x-7)$
$q.)5x^2 + 17x + 6 = (5x+2)(x+3)$
$r.)5x^2 - 7x - 6 = (5x+3)(x-2)$
$s.)3x^2 + 10x + 3 = (3x+1)t(x+3)$
$t.)2x^2 + 9x + 4 = (2x+1)(x+4)$

$5.)x^2 - 7x + 10 = 0\ (x-5)(x-2)\ x = 5, x = 2$
$b.)x^2 - x - 12 = 0\ (x-4)(x+3)\ x = 4, x = -3$
$c.)x^2 - 25 = 0\ (x+5)(x-5)\ x = 5, x = -5$
$d.)x^2 - 3x = 10 = x^2 - 3x - 10 = 0\ (x-5)(x+2)\ x = 5, x = -2$
$e.)x^2 + 10x + 25 = 0\ (x+5)^2\ x = -5$
$f.)x^2 + 81 = 18x = x^2 + 81 - 18x = 0\ (x-9)^2\ x = 9$

UNIT 2 - BUDGETS

1.)250x52/12=1083.33-Answer is B

2.)Repairing any damages is not the tenant's responsibility. So, answer is D.

3.)Fixed costs=Expenses that cost the same amount each month(ex:Rent,cable/internet,Insurance)

Variable costs=Expenses that cost different amounts each month(ex:food,entertainment,furniture)

4.)Option 1:350x12=4200, Option 2:470x12=5640

b.)One quarter of all the utilities.

c.)I would recommend Raj to take option 2, because with the extra utilities expense, the overall rent per month will be about the same as option 2. Plus with option 2, he does not have to share with three other students.

5.)

Budget Item	Monthly Amount($Dolllars$)
Income	
Scholarship(3700/8)	462.50
Job($440x26/12$)	953.33
Total Income	1415.83

Expenses	
Rent	420
Transportation	90
Food($80x52/12$)	346.67
Entertainment	30
clothing	60
Miscellaneous($100x26/12$)	216.67
Total Expenses	1163.34
Total Income-Total Expenses	252.49

6.)Food and transportation

b.)Property tax, mortgage, and lawn care.

7.)Rent,transportation,food,personal,utilities,activities,miscellaneous and clothing

b.)Rent:1200 dollars. This is close to the minimum price of a three-bedroom apartment Auto:570 dollars. This is close to the average cost of a car per month driven 15000 miles/year Food:350 dollars. With four people in a family, you would expect that food would be at least 300 dollars a week. Especially with two adults and two kids. personal:200 dollars. four people in a family, you need to keep clean somehow. I think with two adults and two kids, 200 dollars should be enough for a month. Utilities:100 dollars. In our community, electricity is a little more expensive, so utilities is a bit higher than average for an apartment. Activities:180 dollars. Taking your kids out for fun will be necessary. They might also bring some friends. Mark and Jen will also want a date night. Miscellaneous:130 dollars. You never know especially with two kids what might happen. Field trips or maybe a broken window needs to be fixed in the house. Clothing:110 dollars. Kids grow and they will need to get new clothing.

9.)346.78x52=18032.56/year
b.)$29.95x12 = 359.40/year$
c.)$765x12 = 9180/year$
d.)$427.60x26 = 11117.60/year$
e.)$68.95x4 = 275.80/year$

9.)Rent=950x12=11400/year

Insurance=35.00/2x52=910/year

Cable/Internet=95.00x12=1140/year

Electricity=45.00x12=540/year

Furniture=700x2/6x12=3000/year

UNIT 3 and 4 - Trigonometry + Measurements

1.) sin(20)=c/2.0m

2.0xsin(20)=c

c=0.68m

b.)Tan(N)=4.4/1.6

=2.75

Tan-1(2.75)=70 degrees

2.)Angle B= 180-90-15

B= 75 Degrees

Sin(15)=a/8

a=2.1cm

Sin(75)=b/8

b=7.7cm

b.)SinC=9.2/14(inverse)

C=41 degrees

Angle D= 180-90-41= 49 degrees

Sin(49)=d/14

d=10.6 yards

c.)Angle X= 180-90-67=23 degrees

Tan(23)=x/21

x=8.9m

Sin(23)=8.9/z

z=22.8m

d.)Angle Q= 180-90-51=39 degrees

Tan(51)=r/150

r=185.2mm

sin(51)=185.2/p

p=238.3mm

e.)TanG=1.5/1.2(inverse)

G=51 degrees

Angle H= 180-90-51=39 degrees

Sin(39)=1.2/I

I=1.9m

3.)Angle D= Sin-1(0.45)

Angle D= 27 degrees

b.)Angle D= Cos-1(-0.21)

Angle D= 102 degrees

C.)Angle D= Sin-1(-o.43)

Angle D= 23 degrees

d.)Angle D= Sin-1(0.60)

Angle D= 37 degrees

e.)Angle D= Sin-1(-0.99)

Angle D= 172 degrees

f.)Angle D= Cos-1(-0.84)

Angle D=2 Degrees

4.)Angle R= 180-23-22= 135 degrees

r=5.3sin(135)/sin(22)

r=10km

p=5.3sin(23)/sin(22)

p=5.5km

b.)t=$13^2 + 3^2 - 2(13)(3)cos(32)$
($Squareroottheequation$)

t=10.6 in

Angle V=$10.6^2 + 13^2 - 3^2/2(10.6)(13)$
($cosinversetheproduct$)

Angle V=9 degrees

Angle U= 180-32-9= 139 degrees

5.)Angle Y= 180-83-46=150 degrees

x=9.9sin(83)/sin(51)

x=12.6ft

z=$12.6^2 + 14^2 - 2(12.6)(14)cos(52)$
($squareroottheequation$)

z=11.7ft

6.)Angle C=150 degrees

c=$47^2 + 32^2 - 2(47)(32)cos(150)$ ($squareroot$)

c=76.4 mi

b.)bearing of the two ships is 150 degrees

7.)SA=2(4x4)+4(0.5x4)-2(pie)$(0.7)^2$

SA=36.9

v=(4x4x0.5)-(pie)$(0.7)^2$(0.5)

v=7.2cm^3

8.)7x7, A=49m^2

b.)11x11, A=121in^2

c.)2.5x2.5, A=6.3cm^2

d.)23.5x23.5, A=552.3ft^2

9.)Rectangle: 1x4,2x3

Triangle: 2x4x4, 4x3x3

b.)2x3- Rectangle or 4x3x3- Isoceles Triangle

10.)s= 3(square root)64

s=4ft- 4x4x4

SA=6$x4^2$

SA=96ft^2

b.)s=3(square root)729

s=9m- 9x9x9

SA=6$x9^2$

SA=486m^2

c.)s=3(square root)225

s=6.1- 6.1x6.1x6.1

SA=6$x6.1^2$

SA=223.2cm^2

d.)s=3(square root)3000

s=14.4in- 14.4x14.4x14.4

SA=6x14.4^2

SA=1244.4in^2