Math 12

Final Exam Review

Non-calculator Part:

1. Determine the exact value of cot$\left(-\frac{5π}{6}\right)$
2. -$\sqrt{3}$
3. - $\frac{1}{\sqrt{3}}$
4. $\frac{1}{\sqrt{3}}$
5. $\sqrt{3}$
6. Determine the period of the function f(x) = $3cos\frac{π}{4}x$
7. π/4
8. π/2
9. 4
10. 8
11. Given the point (-12, -5), determine sec θ.
12. $\frac{-13}{12}$
13. $\frac{-13}{5}$
14. $\frac{13}{5}$
15. $\frac{13}{12}$
16. Which equation represents the function graphed below?



1. Determine the range of y = -5sin$\frac{1}{2}x+8$
2. 3≤y≤8
3. 3≤y≤13
4. -13≤y≤-3
5. -13≤y≤13
6. Simplify sin (2x – π)
7. 2sinxcosx
8. -2sinxcosx
9. cos2x – sin2x
10. sin2x – cos2x
11. Solve -2cosx – 1 = 0 , 0≤x≤2π
12. $\frac{π}{3 }, \frac{5π}{3}$
13. $\frac{π}{3 }, \frac{4π}{3}$
14. $-\frac{π}{3 },- \frac{4π}{3}$
15. $\frac{2π}{3 }, \frac{4π}{3}$
16. Determine the general solution for sin2x = -1/2

A.$ \frac{7π}{12 }+2nπ, \frac{11π}{12}+2nπ$ (*n* is any integer)

B.$ \frac{7π}{12 }+nπ, \frac{11π}{12}+nπ$ (*n* is any integer)

C. $\frac{13π}{12 }+2nπ, \frac{21π}{12}+2nπ$ (*n* is any integer)

D. $\frac{13π}{12 }+nπ, \frac{21π}{12}+nπ$ (*n* is any integer)

1. Determine the domain of the function y = log (x – 5)
2. x≥ 5
3. x> 5
4. x≤ 5
5. x< 5
6. Determine log x if x = $\frac{x}{2y^{3}}$
7. logx – log 2 + 3 log y
8. logx – 3log2 + 3logy
9. logx – log2 – 3logy
10. logx- 3log2 – 3logy
11. Simplify log5 5x

5log52

1. $\frac{5^{x}}{10}$
2. $\frac{x}{2}$
3. $\frac{5^{x}}{2}$
4. x – 2
5. A particular type of bacteria multiplies 5-fold every 30 minutes. Initially there are 100 bacteria. Determine an expression for the number of bacteria after k minutes.
6. $\frac{100(5)^{k}}{30}$
7. 100 (5) 30k
8. 100$(5)^{\frac{30}{k}}$
9. 100$(5)^{\frac{k}{30}}$
10. What is the value of x if 

A. 48 B. 64 C. 81 D. 96

1. Solve for x: a x – 2 = bx
2. $\frac{-2loga}{loga-logb}$
3. $\frac{2loga}{loga-logb}$
4. $\frac{-2loga}{loga+logb}$
5. $\frac{2loga}{loga+logb}$
6. If the graph of the function y = f(x) is horizontally compressed by a factor of 5 and then translated 3 units to the left, determine the equation of this new function.
7. y = f(5(x + 3))
8. y =f $\left(\frac{1}{5}(x+3)\right)$
9. y = f(5x + 3)
10. y = $\left(\frac{1}{5}x+3\right)$
11. Which infinite geometric series has the sum of $\frac{25}{3}$?

A. $-5-2-\frac{4}{5}-\frac{8}{25}-…$

B. $-5+2-\frac{4}{5}+\frac{8}{25}-…$

C. $5-2+\frac{4}{5}-\frac{8}{25}+…$

D. $5+2+\frac{4}{5}+\frac{8}{25}+…$

1. Which expression below represents the *n*th term of this sequence?

$$9,-6, 4,-\frac{8}{3},…$$

1. $9(\frac{2}{3})^{n-1}$
2. B. $9(-\frac{2}{3})^{n-1}$
3. C.$ \frac{2}{3}(9^{n-1})$
4. D. $-\frac{2}{3}(9^{n-1})$
5. Which function represents the graph shown below?



|  |  |  |  |
| --- | --- | --- | --- |
| **A.** |  | **C.** |  |
| **B.** |  | **D.** |  |

Written:

1. Factor fully:

$x^{4}-4x^{3}-x^{2}+16x-12 $ (4 marks)

1. On the grid provided, sketch the graph of x = f(y). (2 marks)



1. Solve algebraically: 2log2(3 – x) – log2(6 – x) = 2 (5 marks)
2. Solve algebraically: $\frac{6x}{x-3}+3x=\frac{2x^{2}}{x-3}-5$ (4 marks)
3. Solve algebraically, where –$π \leq x \leq π:$

 3cos2x + cosx – 2 = 0 (3 marks)

If possible, answer using exact values; otherwise answer accurately to at least

2 decimal places.

1. Determine the general solution for cos 3x = ½ . (2 marks)

Solve over the set of real numbers using exact values.

1. Prove: (4 marks)

$$\frac{1-cos2θ}{sin2θ}=\frac{1+tanθ}{1+cotθ}$$