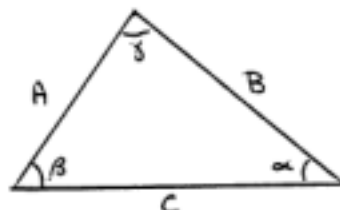


Physics 171 - Handout #1
Mathematics Review

$$ax^2 + bx + c = 0$$



9. and 10.



1. Express x in terms of a , b and c
2. $\ln(e^n) =$ _____
 $\ln(x \cdot y) =$ _____
 $\ln(x/y) =$ _____
 $\ln(a^x) =$ _____
 $e =$ _____ (3 digits)
3. $\log(10^n) =$ _____
 $\log 1000 =$ _____
 $\log .01 =$ _____
4. Area of circle = _____
Circumference of circle = _____
 $360^\circ =$ _____ radians
 $\pi =$ _____ (3 digits)
5. Express c in terms of a and b
Express α in terms of β
Area of triangle = _____
6. Express in terms of a , b and c
 $\sin \alpha =$ _____
 $\cos \alpha =$ _____
 $\sin \beta =$ _____
 $\cos \beta =$ _____
 $\tan \alpha =$ _____
7. Express in terms of trigonometric functions of α
 $\sin(-\alpha) =$ _____
 $\cos(-\alpha) =$ _____
 $\sin(90-\alpha) =$ _____
 $\cos(90-\alpha) =$ _____
 $\sin(180-\alpha) =$ _____
 $\sin(180+\alpha) =$ _____
8. $\sin 0^\circ =$ _____
 $\cos 0^\circ =$ _____
 $\sin 90^\circ =$ _____
 $\cos 90^\circ =$ _____
 $\sin 180^\circ =$ _____
 $\cos 180^\circ =$ _____
 $\sin 270^\circ =$ _____
 $\cos 270^\circ =$ _____
 $\tan 0^\circ =$ _____
 $\tan 45^\circ =$ _____
9. Express C in terms of A , B and γ
 B in terms of A , C and β
 A in terms of B , C and α

10. Express A in terms of B, β and α
 B in terms of A, β and α
 B in terms of C, β and γ
 C in terms of A, α and γ
11. Express the area of the triangle:
 in terms of A, C and β
 in terms of A, B and γ
 Express α in terms of β and γ
12. Volume of a sphere of radius r
 Surface area of a sphere of radius r
13. Metric prefixes

example k means 10^3 , is written kilo
 p means _____, is written _____
 n means _____, is written _____
 μ means _____, is written _____
 m means _____, is written _____
 k means _____, is written _____
 M means _____, is written _____
 G means _____, is written _____

14. Write down the first and second derivatives of the following functions
 (a, b, c and ω are constants)

$\frac{d}{dx} (ax+b) =$	$\frac{d^2}{dx^2} (ax+b) =$
$\frac{d}{dx} (ax^2+bx+c) =$	$\frac{d^2}{dx^2} (ax^2+bx+c) =$
$\frac{d}{dx} \left(\frac{a}{x} \right) =$	$\frac{d^2}{dx^2} \left(\frac{a}{x} \right) =$
$\frac{d}{dt} (\sin(\omega t+a)) =$	$\frac{d^2}{dt^2} (\sin(\omega t+a)) =$
$\frac{d}{dt} (\cos(\omega t+a)) =$	$\frac{d^2}{dt^2} (\cos(\omega t+a)) =$

15. Write down the indefinite and definite integrals of the following functions

$\int adx =$	$\int_1^2 adx =$
$\int (ax+b)dx =$	$\int_0^2 (ax+b)dx =$
$\int (ax^2+bx+c)dx =$	$\int_0^2 (ax^2+bx+c)dx =$
$\int \cos \omega t \, dt$	$\int_0^{\pi/2\omega} \cos \omega t \, dt =$
$\int \sin \omega t \, dt$	$\int_0^{\pi/2\omega} \sin \omega t \, dt =$

16. Given the function:

$$x = -3t^2 + 13t + 10$$

Find the maximum value of x and the value of t for which this maximum occurs.