BACKGROUND KNOWLEDGE FOR CALCULUS

1. Area of a square with side s: _____
2. Area of a rectangle with width w and length l: _____
3. Area of a right triangle with base b and height h: _____
4. Area of a circle with radius r: _____
5. Circumference of a circle with radius r: _____
6. Volume of a box with with w, length l and height h: _____
7. Volume of a cylinder (i.e., a can) with radius r and height h: _____
8. Surface area of a cylinder with radius r and height h: _____
9. Pythagorean Theorem: _____
10. Diagonal of a square with side s: _____
11. Side of a square with diagonal d: _____
12. Quadratic formula (to find roots of $ax^2 + bx + c = 0$): _____
13. Expansion of $(a + b)^2$: _____
14. Expansion of $(a - b)^2$: _____
15. Definition of $\sin\alpha$ in terms of sides of a triangle: _____
16. Definition of $\cos\alpha$ in terms of sides of a triangle: _____
17. Definition of $\tan\alpha$ in terms of sides of a triangle: _____
18. The values of $\sin\alpha$, $\cos\alpha$, $\tan\alpha$, if α is $30^\circ = \pi/6$: _____
19. The values of $\sin\alpha$, $\cos\alpha$, $\tan\alpha$, if α is $60^\circ = \pi/3$: _____
20. The values of $\sin\alpha$, $\cos\alpha$, $\tan\alpha$, if α is $45^\circ = \pi/4$: _____
21. The values of $\sin\alpha$, $\cos\alpha$, $\tan\alpha$, if α is 0°: _____
22. The values of $\sin\alpha$, $\cos\alpha$, $\tan\alpha$, if α is $90^\circ = \pi/2$: _____
23. The values of $\sin\alpha$, $\cos\alpha$, $\tan\alpha$, if α is $180^\circ = \pi$: _____
24. True or False?: $\sqrt{a^2 + b^2} = a + b$. Why (not) (i.e., prove or give a counter-example)?

    _____
25. What is $\sin 2x$ in terms of trig functions of x? _____
26. What is $\sin^2 x$ in terms of trig functions of $2x$? _____

27. What is $\cos^2 x$ in terms of trig functions of $2x$? _____

28. What is the standard trig version of the pythagorean theorem (i.e., inter-relate $\sin x$ and $\cos x$ somehow)? _____

29. Given $\sin \alpha = 5/13$. what is $\cot \alpha$? _____

30. Given $\sin \alpha = 4/5$, what is $\sin 2\alpha$.? _____

31. Calculate the area of a circle, given that the circumference equals 10π. _____

32. Calculate the area of a right triangle, with one side equaling 3 and the hypotenuse equaling 5. _____