C

Trigonometry

You are expected to have the following facts memorized.

1. $\sin x = \dfrac{\text{opposite}}{\text{hypotenuse}}$

2. $\cos x = \dfrac{\text{adjacent}}{\text{hypotenuse}}$

3. $\tan x = \dfrac{\text{opposite}}{\text{adjacent}}$

4. $\tan x = \dfrac{\sin x}{\cos x} = \dfrac{1}{\cot x}$

5. $\sec x = \dfrac{1}{\cos x}$

6. $\csc x = \dfrac{1}{\sin x}$

7. $\sin^2 x + \cos^2 x = 1$

8. $\tan^2 x + 1 = \sec^2 x$

9. $1 + \cot^2 x = \csc^2 x$

10. $\sin(2x) = 2 \sin x \cos x$

11. $\cos^2 x = \dfrac{1}{2}(1 + \cos 2x)$

12. $\sin^2 x = \dfrac{1}{2}(1 - \cos 2x)$

13. $\cos x = \dfrac{e^{ix} + e^{-ix}}{2}$

14. $\sin x = \dfrac{e^{ix} - e^{-ix}}{2i}$

15. $e^{ix} = \cos x + i \sin x$

16. $\cosh x = \dfrac{e^{x} + e^{-x}}{2}$

17. $\sinh x = \dfrac{e^{x} - e^{-x}}{2}$

18. $e^{x} = \cosh x + \sinh x$

You should also know the the graphs of the trig functions and hyperbolic trig functions, as well as the values of the trig functions for the angles $0, \dfrac{\pi}{2}, \pi, \dfrac{3\pi}{2}, \dfrac{\pi}{6}, \dfrac{\pi}{4}$, and $\dfrac{\pi}{3}$.