162 Practice Test 1

1. On a day a grandchild is born, the grandparents deposit $2500 at 7.5% compounded continuously. How much money is in the account when the child is 25 years old?

2. Suppose instead that the interest was compounded yearly. How much would be in the account?

3. How old was the child when the money doubled to $5000?

4. Sketch the graph of $y = e^x$ and $y = \ln x$ on the same axis.

5. What is $\log_{10}.0001$?

6. Find $\ln e^6$ and $e^{\ln 6}$

7. Solve for $x$: $2^x = 7$

8. Solve for $x$: $\ln x + \ln(x + 1) = 1$

9. What is the domain and range of the exponential function $e^x$ and the logarithmic function $\ln x$?

You should be able to find the exact value of sine and cosine for angles of multiples of $\frac{\pi}{6}$ and $\frac{\pi}{2}$. For example:

10. Find $\sin\left(\frac{3\pi}{4}\right)$

11. Find $\cos\left(-\frac{5\pi}{6}\right)$

12. Find $\tan(-2\pi)$

Given a diagram of a triangle you should be able to find the trig functions of an angle. For example:

13. Find the sine of the angle shown.

14. Find the tangent and cosine of that same angle.

15. Find the radian measure of that same angle.

You should know the domain and range of sine, cosine and tangent, as well as the domain and range of arcsine, arccosine and arctangent.

You should be able to graph simple trig functions, knowing the amplitude, period and phase shift (or at least how to graph over one full period). For example:

16. Graph the equation $y = -3\cos(\pi x)$ over one full period.

17. Graph the equation $y = 2\sin\left(\frac{x}{2} - \frac{\pi}{2}\right)$.

You should be able to find the exact values of the inverse trig functions without using a calculator. For example:

18. Find $\arcsin 0$, $\arccos 0$, $\arctan 0$

19. Find $\sin^{-1}1$, $\cos^{-1}\frac{\sqrt{2}}{2}$, $\tan^{-1}1$

You should be able to find the exact value of expressions involving trig functions of inverse trig functions, i.e.

20. Find $\sin(\arctan\frac{3}{4}))$ or even

21. Find $\sin(\cos^{-1}x)$