1. You deposit $25,000 in a fund that pays 8.75% interest compounded monthly. How much money will you have in 25 years?
2. How long before your money doubles?
3. A biologist has 100 flies. After 2 days there are 300 flies. Write a model for the population growth $Q(t) = Q_0 e^{kt}$, and using the model predict how many flies there would be in two more days.
4. Radioactive iodine has a half-life of 60 days. How long would it take for the iodine to decay a level of 20% of the original amount?
5. Graph $y = \ln x, y = e^x$
6. Solve $\ln x = 100$
7. Solve $\ln x - \ln 3 = 2$
8. Solve $2^x = 1,000,000$
9. Solve $\left( \frac{1}{2} \right)^{60} = .2$
10. Find $e^{\ln x}$ or $\ln e^{x-1}$
11. Find $e^{\ln(\sin x)}$
12. Specify the domain and range of the exponential function and the logarithmic function.

13. Find the sine and cosine of the angle

![Triangle with sides 5 and 8]

14. Find the other trigonometric functions of $x$ if $\sin x = \frac{7}{25}$ with $x$ in quadrant I.

15. Find $\sin 2x$ for the same $x$ in number 13.

16. Find the domain, amplitude and period of $y = 2\cos \pi x$

17. Graph $y = 2\cos \pi x$

18. Find $\sin^{-1} \left( \frac{\sqrt{3}}{2} \right)$

19. Simplify $\tan x \csc x$

20. Use the substitution $x = 3\sin \theta$ to rewrite $\sqrt{9 - x^2}$ as a trigonometric function of $\theta$

21. Now substitute back, using $\theta = \sin^{-1} \left( \frac{x}{3} \right)$

22. Solve the triangle with $A = 60^\circ, C = 100^\circ, a = 20$

23. Find the area of that triangle.

24. Solve the triangle with $a = 9, b = 12, c = 15$

25. Multiply the numbers $(2 - 3i)(4 + 5i)$

26. Write $z = \frac{1}{2} - \frac{\sqrt{3}}{2}i$ in trigonometric form.

27. Now find $z^6$ and rewrite in standard form.

28. Find the four fourth roots of 1.