Section 5.1: Exponential Functions

Exercises

Sketch the following graphs. (I recommend calculating a table of values as your first step.)

1. $y = 2^x$

2. $y = 3^x$

3. $y = \left(\frac{1}{2}\right)^x$

4. $y = 2^{-x}$

5. $y = 4^x$ and $y = \left(\frac{1}{4}\right)^x$ on the same graph

Solve the following exponential equations.

6. $3^{x+2} = 9$

7. $6^x = \frac{1}{36}$

8. $10^{-x} = 0.01$

9. $4^{5-x} = 64$

10. $8^x = \frac{1}{2}$

11. $5^{2x} = 125$

12. $2^{5+x} = 256$

13. $64^{5+x} = 4$

14. $100^{5-x} = 1000^2$

15. $49^{2m} = 7^{m+1}$

16. $2^{b+1} = 8^{1-b}$

17. $4^x = \sqrt{2}$

18. $\left(\sqrt{2}\right)^y = 4$

19. $\left(\sqrt{2}\right)^k = \frac{1}{2}$

20. $0.1^x = 100$

21. $0.5^{0.5x} = 16$

22. $5^{2x} = 5^{3x}$

Solve the following word problems.

23. Nicole has invested $5000 into an account paying 5% per year, compounded semi-annually. How much money will be in her account after five years?

24. Peter has a high-tech savings account that compounds continuously. How much money will he have for an initial investment of $800 at 3% per year after six years?

25. Darcy has borrowed $2000 from his bank at 8% per year compounded daily. How much will he owe the bank after one year if he pays everything off at once?

26. A mutual fund at Fred's Bank returns 12% annually. How much will an initial investment of $10,000 be worth after ten years?

27. David has invested $1500 into an account paying 2% per year. How much money will he have after 3 years if the interest is compounded

    a) yearly?
    b) weekly?
    c) daily?
    d) continuously?