<u>Appendix B</u>

1. Use absolute value notation to describe: x is at most 3 units from a.

2. Solve the equation and check you answer: $3(x+7)-2x=3+2x$

3. Find the real solutions: $2x^2-5x-1=0$

4. Solve the inequality and graph the solution on the real number line.

$$-6 \le \frac{2-7x}{3} < 1$$

5. Find the solution interval(s): $|2x+3| \ge 5$

6. Find the solution interval(s): $(x-3)^2 < 64$

7. Find the distance between a and b when $a = 75$ and $b = -13$

Chapter 1

1. Find the distance between the points (3, -1) and (7, 2)

2. Find the midpoint of the line segment joining (6, 9) and (-3, 1)

3. Find the point (x, 0) that is equidistant from (6,1) and (-2, 5)

4. Test $y = |x| - 2$ for symmetry.

5. Write the equation for the circle $x^2 + y^2 - 6x + 2y + 4 = 0$ in standard form.

6. Find the intercepts: $y = -4x^2 + 4x - 1$

7. Which of the following function represent y as a function of x:
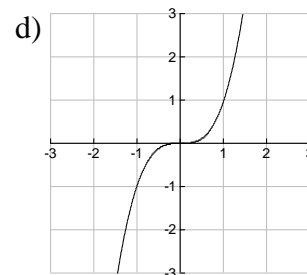
   a) $3y + 2x - 7 = 0$ b) $5x^2 y = 9 - 2x$
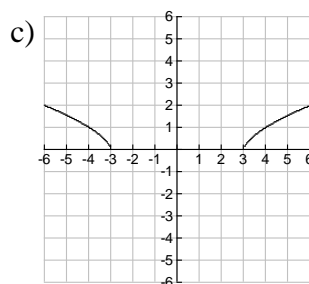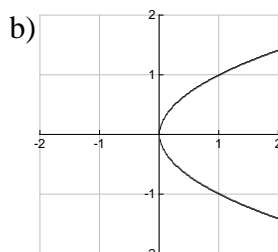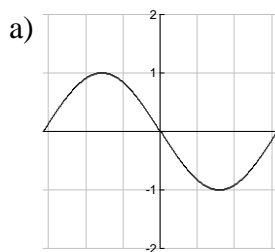
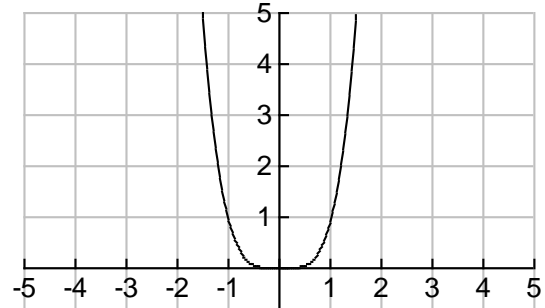   c) $3x^2 - 4y^2 = 9$ d) $x = 3y^2 - 1$

8. Given $f(x) = 3x - 7$, find $f(x+1) + f(2)$

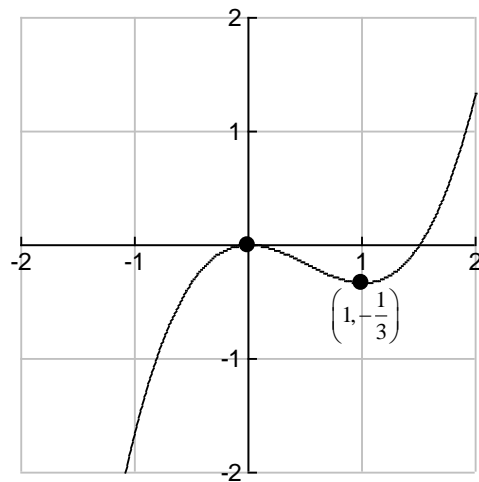9. Find the domain and range for the function: $f(x) = |3 + x|$

10. Which of the following graphs represent functions of x ?

a)   b)   c)   d)

11. Given the graph of $y = x^4$; sketch the graph of $y = (x-2)^4 + 6$

12. Given the graph of $y = \dfrac{2}{3}x^3 - x^2$; determine the intervals for which the function is increasing.

$\left(1, -\dfrac{1}{3}\right)$

13. Write the equation of the line that passes through the point (-1, 5) and has a slope of 2.

14. Find the slope of the line passing through (5, 9) and (-1, -3)

1. Determine the left and right behavior of the function: $f(x) = -4x^3 + 3x^2 - 1$.

2. Find all the real zeroes of the function: $f(x) = 2x^3 + 14x^2 + 24x$.

3. Perform the following division: $(6x^4 - 4x^3 + x^2 + 10x - 1) \div (3x + 1)$.

4. Use synthetic division to divide: $(x^4 + 2x^2 - x + 1) \div (x - 2)$.

5. List the possible rational zeros: $f(x) = 3x^5 - 2x^3 + 3x - 5$.

6. Given $f(x) = x^3 + 2x - 1$, determine if $x = -1$ is an upper bound for the zeros of f, a lower bound for the zeros of f, or neither.

7. Write $x^4 - 16$ as a product of linear factors.

8. Perform the indicated operations, then write the result in standard form.

$$3i(2 + 7i) - \sqrt{-4}(\sqrt{-9} + 1)$$

9. Write the complex number $-7i + 15i^7$ in standard form.

10. Find the quadratic function whose maximum point is (-1,2) and passes through the point (0,1).

11. Find the asymptotes of : $f(x) = \dfrac{x^3 - 2x^2 + 5}{x^2}$.

12. Sketch the graph of the function : $f(x) = \dfrac{x + 2}{x + 1}$

Chapter 3

1. Sketch a graph of the function: $f(x) = 3^x - 5$.

2. Find the balance B after 10 years if $800 is invested in an account that pays $11\frac{1}{2}\%$ interest compounded monthly. $A = P\left(1 + \dfrac{r}{n}\right)^{nt}$

In problems 3 – 5, evaluate the expression.

3. $200 - 5e^{0.002x}$, for $x = 65$.

4. $\dfrac{16\ln(\frac{1}{2})}{3\ln 10}$

5. $\log_5 22$

6. Write the equation as a single logarithm: $\dfrac{1}{5}[3\log(x+1) + 2\log(x-1) - \log 7]$

7. Write in logarithmic form: $3^5 = 243$

8. Solve for x: $\ln x = 5.3670$

9. Use logarithms to simplify the following:

   A) $\log_b b$ B) $\log_b\left(\dfrac{m}{n}\right)$ C) $b^{\log_b x}$

10. Find the domain of the function: $f(x) = 3 - \log(x^2 - 1)$

11. The demand equation for a certain product is given by $p = 450 - 0.4e^{0.007x}$.
Find the demand x if the price charged is $300.

In problems 12 -14, solve for x.

12. $\log x + \log(x+3) = 1$

13. $2^{x-1} = 5^{2x+6}$

14. $\log_x 16 = 5$