Review the following in preparation for the quarterly. You will be permitted to use a graphing calculator.
  1. Test on 1.4–1.9
  2. Quiz 4.1
  3. Complete the quarterly review below

DO ALL WORK ON A SEPARATE SHEET OF PAPER!!

Use $f(x) = 2x - 1$ for questions #1 & 2.

1. Write the function:
    a. $g(x)$, that is the reflection of $f(x)$ in the y-axis.
    b. $h(x)$, that is the reflection of $f(x)$ in the x-axis.

2. Write the function $g(x)$, that shows a vertical shift of 3 up and a horizontal shift of 5 left for $f(x)$.

3. How do you determine if a relation is a function? If a relation is one-to-one?

4. If $f(x) = 2x^3 - 1$, find the inverse and graph both the function and the inverse on the same set of axes.

5. Algebraically determine if $f(x) = 3x^4 - 5x^2 + 1$ is even, odd, or neither and identify any symmetry.

6. If $f(x) = 2x^2 - 3$ and $g(x) = x + 5$, find:
    a. $(f \circ g)(-1)$ b. $(g \circ f)(x)$, state the domain
    c. $\left(\dfrac{f}{g}\right)(x)$, state the domain   d. $(f - g)(x)$

7. Determine the interval(s) over which the function $f(x) = 3(x - 4)^2 + 6$ is decreasing.

8. Identify the domain of each function:
    a. $f(x) = x^2 + 2x + 4$ b. $f(x) = \sqrt{x + 6} - 2$
    c. $h(x) = \dfrac{3x}{x - 5}$ d. $k(x) = \dfrac{2}{\sqrt{x + 6}}$

9. Find the zeros of the function:
    a. $f(x) = 4x^3 - 24x^2 - x + 6$ b. $f(x) = 2x^2 - 7x - 30$

10. Determine whether the function is even, odd, or neither and describe the symmetry that exists, if any.
    a. $g(x) = x^2 - 4x + 5$ b. $f(x) = x^3 - 5x$ c. $j(x) = x^4 - 5x^2 - 3$

11. If $f(x) = 3\sqrt{2x}$ and $g(x) = x - 1$, find $g(f(x))$.

12. Describe all of the transformations from the parent function for the following function:
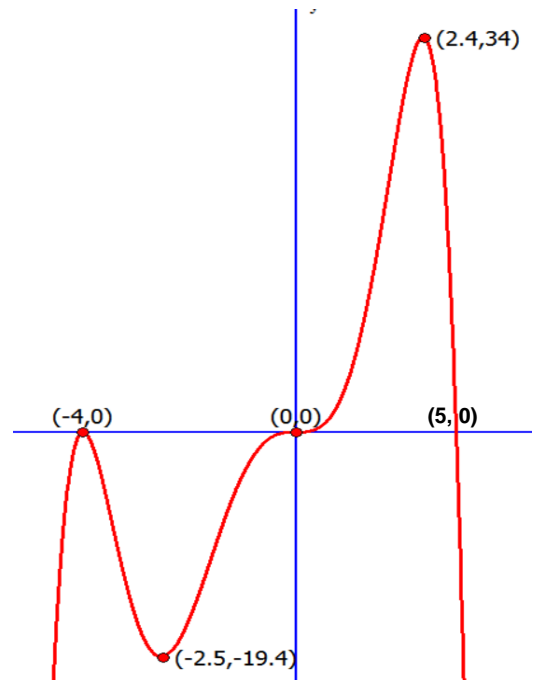
$$d(x) = -3(-x - 4)^2 - 8$$

13.   Analyze the function pictured. Include the following:

   a.   Domain & Range:

   b.   Inc/dec/constant intervals:

   c.   Find the zero(s). State your answer(s) as ordered pairs.

   d.   Find the relative minimum(s)/maximum(s).

(2.4,34)

(-4,0)   (0,0)   (5,0)

(-2.5,-19.4)

14.   Determine the quadrant in which the terminal side of an angle of this size lies.

   $\dfrac{5\pi}{4}$ _____ $\dfrac{\pi}{2}$ _____ $\dfrac{9\pi}{4}$ _____ $-222°$ _____

15.   List one positive and one negative coterminal angle for each of the following angles:

   $108°$ _____ $216°$ _____ $\dfrac{5\pi}{3}$ _____ $-340°$ _____

16.   Determine supplementary angles for:

   $\theta = \dfrac{3\pi}{4}$ _____ $\theta = 230°$ _____ $\theta = 15°$ _____ $\theta = \dfrac{5\pi}{4}$ _____

17.   Determine complementary angles for: $\theta = \dfrac{3\pi}{5}$ _____ $\theta = 21°$ _____ $\theta = 37°$ _____

18.   Convert the following angles to degrees: $\theta = \dfrac{3\pi}{5}$ _____ $\theta = \dfrac{3\pi}{4}$ _____

19.   Convert to (degree) decimal form. Round to 3 decimal places:
   $23° \ 17' \ 29''$ _____ $-14° \ 14' \ 14''$ _____

20.   Convert the angle measures from degrees to radians or radians to degrees – round to 3 decimal places.
   $485°$ _____ $\dfrac{5\pi}{3}$ _____ $\dfrac{7\pi}{6}$ _____ $-33° \ 15'$ _____

21.   What is the central angle θ of a circle with radius 7.5 inches that subtends an arc of 22 inches?

22.   What is the arc length intercepted by a central angle of $20°$ with a radius of 8 cm?

23.   What is the area of a sector of radius 10 inches and central angle of $\theta = 25°$? _____