Name _____ Date _____ Pd ____

Chapter 5 Test Review

I.   5.1

Evaluate the expression without using a calculator.

1. $8^{\frac{7}{3}}$

2. $9^{\frac{5}{2}}$

3. $(-27)^{-\frac{2}{3}}$

Find the real solution(s) of the equation. Round your answer to the thousandths place when appropriate.

4. $x^5 + 17 = 35$

5. $7x^3 = 189$

6. $(x + 8)^4 = 16$

II.   5.2

Simplify the expression completely.

1. $\left(\dfrac{6^{\frac{1}{5}}}{6^{\frac{2}{5}}}\right)^3$

2. $\sqrt[4]{32} \cdot \sqrt[4]{8}$

3. $\dfrac{1}{2 - \sqrt[2]{8}}$

4. $4\sqrt[5]{8} + 3\sqrt[5]{8}$

5. $2\sqrt{48} - \sqrt{3}$

6. $\left(5^{\frac{2}{3}} \cdot 2^{\frac{3}{2}}\right)^{\frac{1}{2}}$

Simplify the expression. Restrict the domain when necessary.
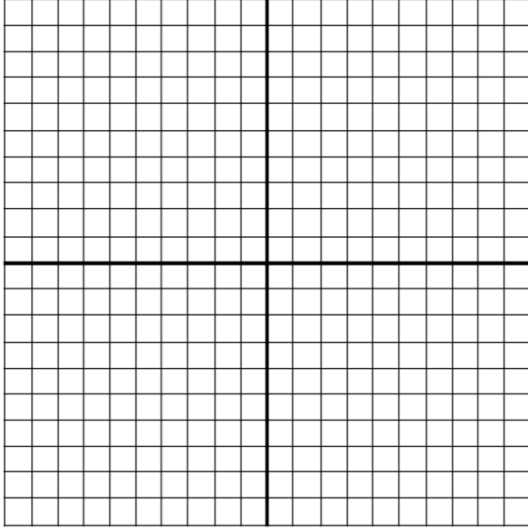
7. $\sqrt[3]{125w^9}$

8. $\dfrac{2^{\frac{1}{4}}y^{\frac{5}{4}}}{6y}$
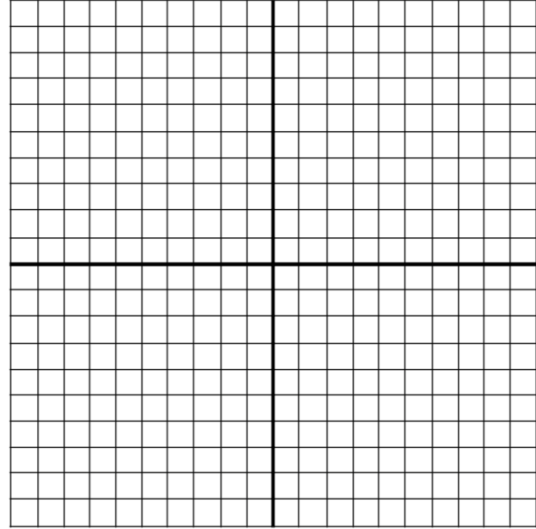
9. $\sqrt{10a^5} - a^2\sqrt{40a}$

III.   **5.3**

Describe the transformation of f represented by g. Then graph each function.

1. $f(x) = \sqrt{x}, g(x) = -2\sqrt{x}$

2. $f(x) = \sqrt[3]{x}, g(x) = \sqrt[3]{-x} - 6$

IV.   **5.4**

Solve the equation. Check your solution for extraneous solutions. Restrict the domain when necessary.

1. $4\sqrt[3]{2x + 1} = 20$ 2. $\sqrt{4x - 4} = \sqrt{6x - 1} + 1$ 3. $(-3x)^{\frac{2}{3}} = 36$

Solve the inequality. Remember when the sign flips.

4. $-5\sqrt{x} - 3 > 17$ 5. $2\sqrt{x + 7} \leq 32$ 6. $-\sqrt[3]{x - 2} \geq 4$

7. In a wave pool, the wave speeds in meters per second can be modeled by $s(d) = \sqrt{9.8d}$, where d is the depth in meters of the water in the wave pool. Estimate the depth of the water when the wave speed is 200 meters per second.

V.   5.5

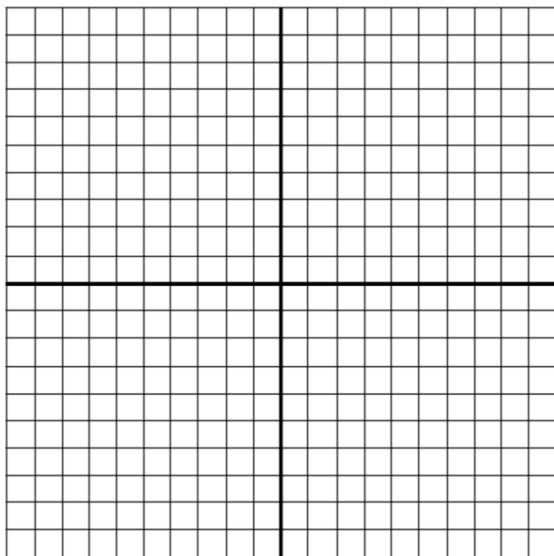*Perform the given operations, state the domain, and then evaluate given an x value.*

1. Let $f(x) = 5\sqrt{2-x}$ and $g(x) = -2\sqrt[3]{2-x}$. Find (fg)(x) and $\left(\frac{f}{g}\right)(x)$. Domain. Evaluate when x = 2.

2. Let $f(x) = 3x^2 - 1$ and $g(x) = x - 5$. Find (f + g)(x) and (f – g)(x). Domain. Evaluate for x = -5.
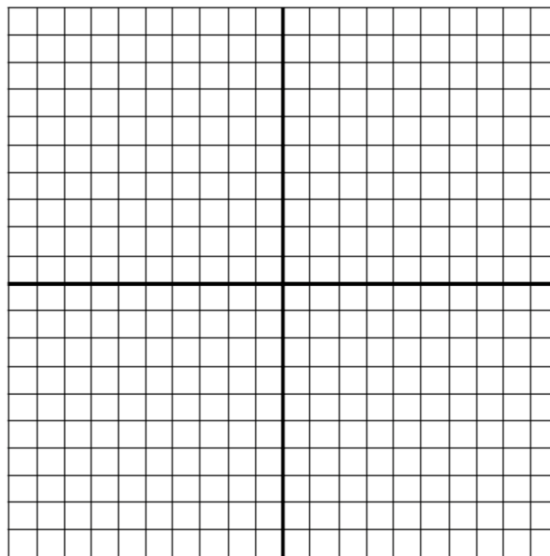
VI.   5.6

Find the inverse of the function. Then graph the function and its inverse.
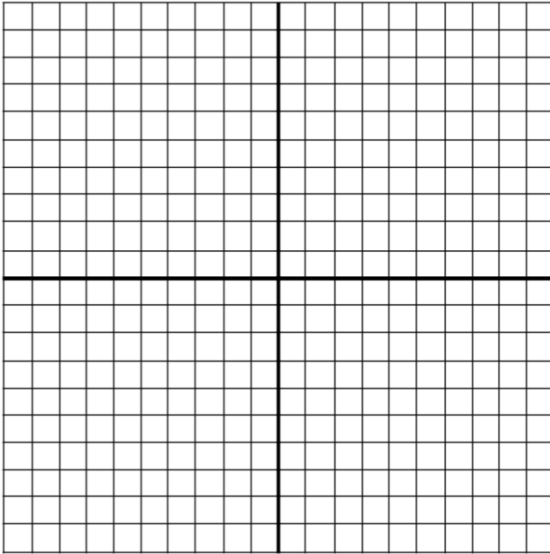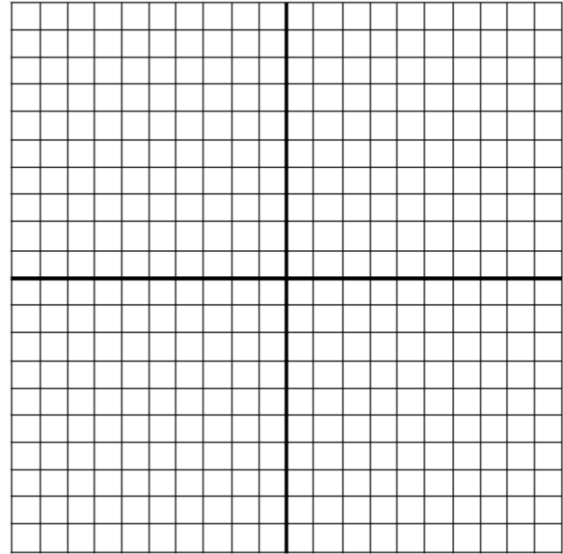
1. $f(x) = -\frac{1}{2}x + 10$ 2. $f(x) = x^2 + 8, (0, \infty)$

3. $f(x) = -x^3 - 9$

4. $f(x) = 3\sqrt{x} + 5$

Determine whether the functions are inverse functions.

5. $f(x) = 4(x - 11)^2, g(x) = \frac{1}{4}(x + 11)^2$

6. $f(x) = -2x + 6, g(x) = -\frac{1}{2}x + 3$

7. On a certain day, the function that gives U. S. dollars in terms of British pounds is $d = 1.587p$, where d represents U. S. dollars and p represents British pounds. Find the inverse function. Then find the number of British pounds equivalent to 100 U.S. dollars.