Unit 4 Review Part 1 Honors

**Simplify each monomial**

1) $\left(\frac{x^{7}y^{-2}z^{8}}{9x^{4}yz^{-2}}\right)^{-3}$ 2) $10\left(3x^{4}y^{5}\right)^{2}⋅(2x^{4}y^{6})$ 3) $x^{1/3}∙\sqrt{9x^{6}}$

**Solve each of the following. (Check for extraneous solutions)**

4) $11\sqrt[4]{x^{2}}+7=29$ 5) $2x^{\frac{2}{3}}-2=16$ (Why does this equation have two solutions?)

6) $\sqrt{2x+7}+4=x$ 7) $3\left(x+5\right)$3/5 – 1 = 23

 8) $\frac{x+5}{x}=\frac{x+1}{3}$ 9) System: $\left\{\begin{array}{c}\frac{x}{y}=\frac{y}{x+16}\\-2x+y=-3\end{array}\right.$

Variation Problems:

10. Neglecting air resistance, the distance (d) that an object falls varies directly as the square of the time (t) it has been falling. If an object falls 64 feet in 2 seconds, determine the distance it will fall in 6 seconds.

11. x varies inversely as the cube of y. If x is 16 when y is 5, find x when y is 2.

12. Wind resistance varies jointly as an object’s surface area and velocity. If an object traveling at 40 mile per hour with a surface area of 25 square feet experiences a wind resistance of 225 Newtons, how fast must a car with 40 square feet of surface area travel in order to experience a wind resistance of 270 Newtons?

13. If f varies jointly as g and the cube of h, and f = 200 when g = 5 and h = 4, find f when g = 3 and h = 6.

14. $y=\frac{3}{x+1}-4$

a) Transformations from parent function $y=\frac{3}{x}$:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Asymptotes: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Domain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Increasing Interval: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Decreasing Interval: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

End Behavior: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15. $y=\sqrt{x+2}-1$

a) Transformations from parent function $y=\sqrt{x}$:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Domain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Increasing Interval: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Decreasing Interval: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

End Behavior: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. $y=-\sqrt[3]{x-5}+3$

a) Transformations from parent function $y=\sqrt[3]{x}$:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Domain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Increasing Interval: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Decreasing Interval: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

End Behavior: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. $y=\frac{1}{x-2}+6$

a) Transformations from parent function $y=\frac{1}{x}$:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Asymptotes: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Domain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Increasing Interval: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Decreasing Interval: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

End Behavior: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_