Algebra 2 Unit 1 quiz 1: The squaring and cubing functions, The square root and reciprocal functions, Shifting a graph up, down, left and right

Name _____ Date _____ Period _____

8 questions, 22 points

1. Find every $x \neq 0$ with $\frac{1}{x} < 4$. (2 points)

2. (2 points)

(a) Find every x with $\sqrt{x} < 1.5$.

(b) Find every x with $\sqrt{x} > -2$.

3. Without working out any of the powers, decide which number is greater, and give the reason.

(a) $(-2.7)^2$ or 2.6^2 (b) $(-2.7)^3$ or 2.6^3

(c) 0.3^2 or 0.3^3 (3 points)

4. On each graph, find the slope of the segment joining the points with inputs 0 and 1, the points with inputs 1 and 2, and the points with inputs 2 and 3.

(a) $y = x$ (b) $y = x^2$ (c) $y = x^3$

Then say what the slopes show about the shapes of the three graphs. (3 points)

5. Priya cuts square coasters with sides from 4 cm to 12 cm long. A coaster with side s cm has area $A = s^2$ square centimeters. (3 points)

(a) Give the domain and range of A in this setting.

(b) Can a coaster have an area of 150 square centimeters? Of 50 square centimeters? For each yes, give the exact side.

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6. Sarah plots $y = \dfrac{1}{x}$ at $x = -2, -1, 1$ and 2, then joins the four points with one smooth curve that passes through the origin. (3 points)

(a) Find y at $x = 0.5, 0.1, -0.5$ and -0.1. Are these points above or below Sarah's curve?

(b) Describe what the true graph does between $x = -1$ and $x = 1$, and explain why it cannot be one unbroken curve.

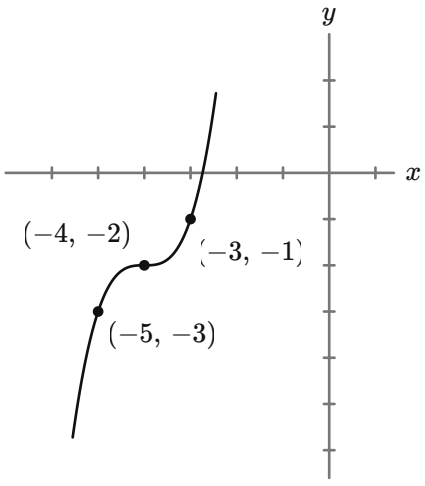
7. Let $g(x) = \sqrt{x - 4} + 2$. (3 points)

(a) Describe how the graph of g is moved from $y = \sqrt{x}$, and give its starting point.

(b) Give the domain and the range of g.

(c) Solve $g(x) = 7$.

8. The figure shows the graph of $y = x^3$ after a translation, with three of its points marked. (3 points)



(a) Name the translation and write the equation of the graph.

(b) Use another marked point to check that the shape has not changed.

(c) Find the exact x-intercept of the graph.

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