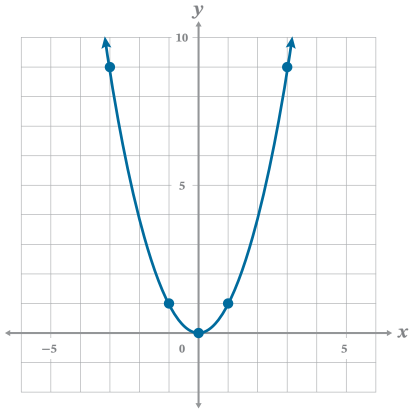
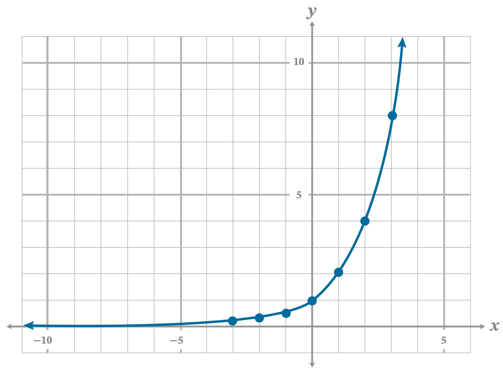
Unit 5 Test: Quadratics, Exponentials, and Radicals

The test answer keys provide answers only.
Worked solutions for these problems are located in the Digital Pack.

1) **A)** $p(x)$: $\{9, 4, 1, 0, 1, 4, 9\}$



B) $r(x)$: $\left\{\frac{1}{8}, \frac{1}{4}, \frac{1}{2}, 1, 2, 4, 8\right\}$



C)

	$p(x)$	$r(x)$
Domain	all real numbers, or *R*, or $(-\infty, \infty)$ all	real numbers, or *R*, or $(-\infty, \infty)$
Range	range $y \geq 0$, or $[0, \infty)$	$y > 0$, or $(0, \infty)$

D) **Sample:**
Similarities:
Both $p(x)$ and $r(x)$ have the same domain. The graphs of both are only in the first and second quadrant. Because $p(2) = r(2) = 4$, both graphs share the point $(2, 4)$.

The functions are both positive functions, and the range values only contain positive numbers.

Differences:
The function $p(x)$ is a u-shaped graph, or a parabola. Reading the graph from left to right, the graph decreases, then switches directions and increases. The values in the table are integers only (but rational numbers do exist as part of the function). The y-intercept is the origin, or $(0, 0)$, making the range greater than or equal to zero. The solution to $p(x)$ is $x = 0$ because this is the x-intercept of the graph.

The function $r(x)$ represents an exponential growth function. Reading the graph from left to right, the values grow exponentially larger. The table includes values smaller than 1. The range is greater than zero since the graph will never actually reach zero. The y-intercept is $(0, 1)$ since any base raised to the zero power is equal to one. The common ratio for $r(x)$ is 2.

2) D **3)** D **4)** B **5)** A **6)** C **7)** B **8)** B **9)** C **10)** D **11)** A **12)** C

13) D **14)** B **15)** C **16)** B **17)** A **18)** C **19)** D **20)** A **21)** D **22)** C **23)** B

24)

- [ ] $8nb^2\sqrt[3]{b^2}$
- [x] $2nb^2\sqrt[3]{3b^2}$
- [ ] $2^{\frac{3}{2}}3^{\frac{1}{2}}n^{\frac{3}{2}}b^{\frac{8}{2}}$
- [x] $2^{\frac{3}{3}}3^{\frac{1}{3}}n^{\frac{3}{3}}b^{\frac{8}{3}}$

25)

- [ ] 2
- [x] $-\sqrt{2}$
- [x] $\sqrt{2}$
- [ ] no solution