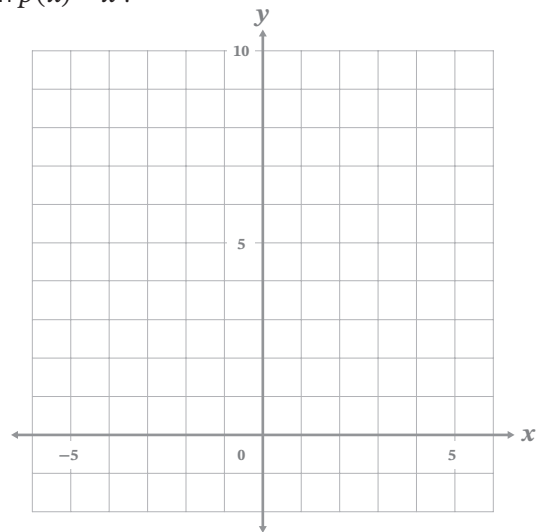


Unit 5 Test: Quadratics, Exponentials, and Radicals

1) Use the functions $p(x) = x^2$ and $r(x) = 2^x$ to answer the following problems.

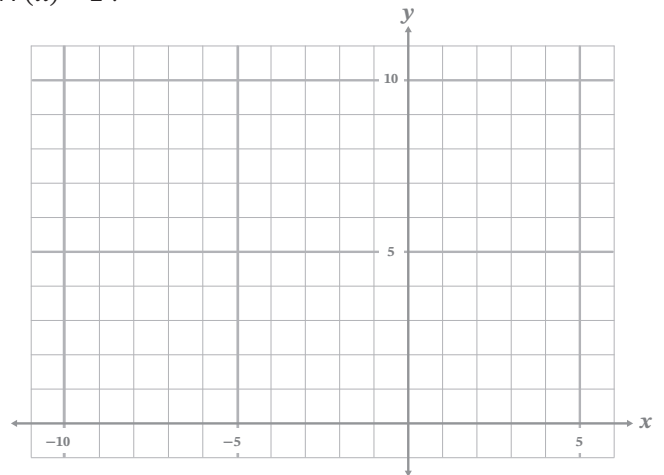
A) Complete the table and graph for the function $p(x) = x^2$.

x	$p(x)$
-3	
-2	
-1	
0	
1	
2	
3	



B) Complete the table and graph for the function $r(x) = 2^x$.

x	$r(x)$
-3	
-2	
-1	
0	
1	
2	
3	



C) Name the domain and range for $p(x)$ and $r(x)$.

	$p(x)$	$r(x)$
Domain		
Range		

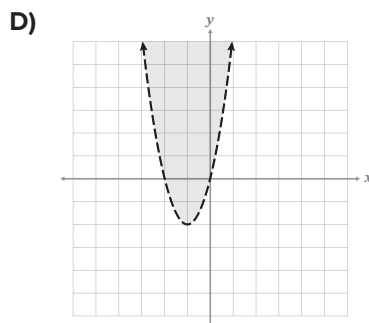
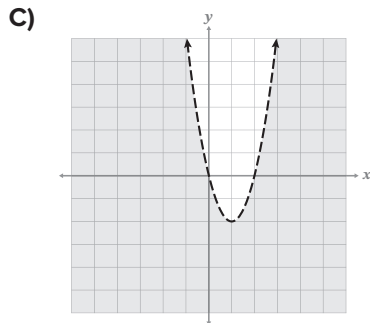
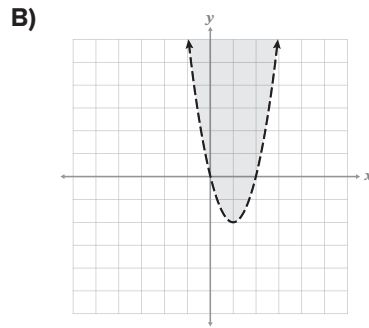
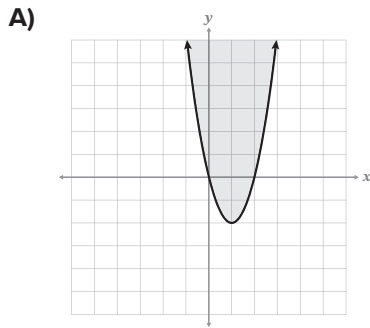
D) Describe two similarities and two differences between a quadratic and exponential function. Use parts A–C to help with your description.

CONTINUE

- _____ 2) Given $f(x)$, determine the vertex and whether it is the minimum or maximum point for the function: $f(x) = -3x^2 + 6x + 4$
- A) Minimum, (1, 7)
 - B) Minimum, (-1, 1)
 - C) Maximum, (-1, 1)
 - D) Maximum, (1, 7)

- _____ 3) Rewrite the expression so all of the terms are in the numerator: $\frac{x^{-2}y^4z}{x^3yz^3}$
- A) $x^{-1}y^3z^2$
 - B) $x^{-1}y^3z^{-2}$
 - C) $x^{-5}y^{-3}z^{-2}$
 - D) $x^{-5}y^3z^{-2}$

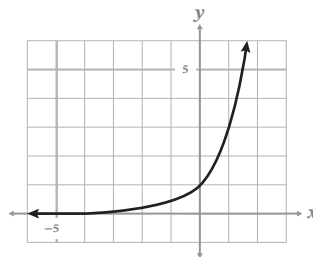
- _____ 4) Determine the graph that best represents the quadratic inequality: $y > 3x^2 - 5x$



- _____ 5) Rewrite the expression so all terms are in the numerator: $(3x^5y^7)^0(2^8x^2y^{-10})^{\frac{1}{4}}$
- A) $4x^{\frac{1}{2}}y^{\frac{-5}{2}}$
 - B) $12x^{\frac{11}{2}}y^{\frac{5}{2}}$
 - C) $4x^{\frac{-1}{2}}y^{\frac{5}{2}}$
 - D) $12x^{\frac{5}{3}}y^{\frac{-1}{2}}$

CONTINUE

- _____ 6) Simplify: $\sqrt{72x^5y^8}$
- A) $36x^2y^4\sqrt{2x}$
 B) $36x^2y^4\sqrt{2}$
 C) $6x^2y^4\sqrt{2x}$
 D) $6x^2y^4\sqrt{2}$
- _____ 7) Name the roots of the quadratic function: $g(x) = 2x^2 + 5x + 2$
- A) $x = -2.5, 0$
 B) $x = -0.5, -2$
 C) $x = 0, 2$
 D) $x = 0.5, 2$
- _____ 8) Given the equation $y = (x + 4)^2$, find the new equation if the quadratic is translated 3 units to the right and 2 units down.
- A) $y = (x + 7)^2 - 2$
 B) $y = (x + 1)^2 - 2$
 C) $y = (x - 3)^2 - 2$
 D) $y = (x - 1)^2 - 2$
- _____ 9) Solve for all possible solutions: $r^2 - 2 = 18$
- A) ± 4
 B) $\pm 4\sqrt{5}$
 C) $\pm 2\sqrt{5}$
 D) $\pm 10\sqrt{2}$
- _____ 10) Select the equation that best matches the graph of the exponential function.



- A) $y = 3x$
 B) $y = 3^{-x}$
 C) $y = -3^x$
 D) $y = 3^x$

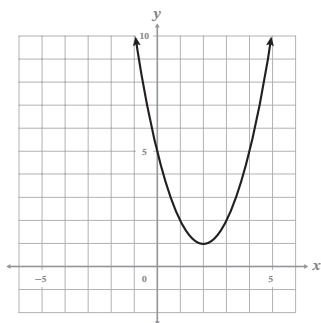
CONTINUE

- _____ 11) Simplify. Your answer should contain positive exponents only: $\frac{(a^5 b^{-2} c^0)^3}{a^0 b^{-4} c^4}$
- A) $\frac{a^{15}}{b^2 c^4}$
- B) $\frac{a^{15} b^2}{c}$
- C) $\frac{a^{15}}{b^{10} c^4}$
- D) $\frac{a^{15} b^{10}}{c}$
- _____ 12) Determine a , h , and k for the quadratic function: $j(x) = -2(x + 1)^2 + 6$
- A) $a = -2, h = 1, k = 6$
- B) $a = -2, h = 1, k = -6$
- C) $a = -2, h = -1, k = 6$
- D) $a = -2, h = -1, k = -6$
- _____ 13) Simplify: $\sqrt{27} + 2\sqrt{3} + \sqrt{81}$
- A) This expression is already simplified.
- B) $6\sqrt{3} + 9$
- C) $5\sqrt{3} + 3$
- D) $5\sqrt{3} + 9$
- _____ 14) Solve for all possible solutions: $\sqrt{2v + 1} = 5$
- A) 13
- B) 12
- C) 2
- D) 1
- _____ 15) Maverick deposited \$2,500 into a savings account that earned 0.75% annually. The account was left untouched for seven and a half years. Which equation best represents the compound interest Maverick will earn?
- A) $y = 2,500 (1 - 0.75)^{7.5}$
- B) $y = 2,500 (1 + 0.75)^{7.5}$
- C) $y = 2,500 (1 + 0.0075)^{7.5}$
- D) $y = 2,500 (1 - 0.0075)^{7.5}$

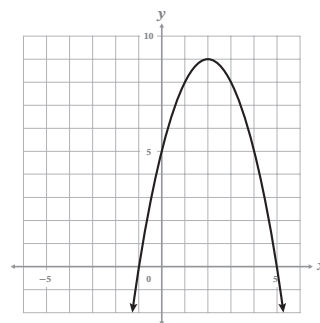
- _____ 16) Determine the domain and range of the exponential function: $y = 2 \cdot \left(\frac{1}{3}\right)^x - 1$
- A) domain: $x > 0$; range: $y > -1$
- B) domain: all real numbers; range: $y > -1$
- C) domain: all real numbers; range: $y < -1$
- D) domain: $x < 0$; range: $y < -1$
- _____ 17) The population of Smallville declined by 1.2% yearly. If the population is *now* 5,253 people, how many lived in Smallville 5 years ago?
- A) 5,580
- B) 5,575
- C) 4,945
- D) 2,944

- _____ 18) Determine the graph that best matches the given function: $f(x) = -x^2 - 4x + 5$

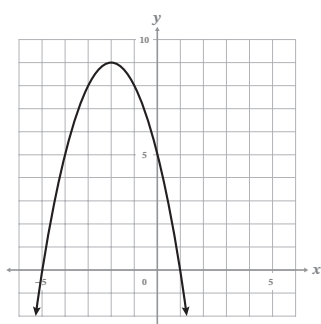
A)



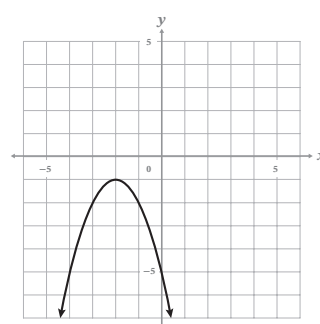
B)



C)



D)



- _____ 19) Solve for a : $81^{2a} = 27^{\frac{1}{3}}$

- A) $\frac{1}{2}$
- B) $\frac{3}{8}$
- C) $\frac{1}{4}$
- D) $\frac{1}{8}$

CONTINUE