Lesson 12-1: Graphing Rational Functions

Part 1: Graphing Rational Functions

1. 010704b
What is the total number of points of intersection of the graphs of the equations $xy = 12$ and $y = -x^2 + 3$?
[A] 4 [B] 1 [C] 3 [D] 2

2. 080422a, P.I. A.A.15
For which value of x is the expression $\frac{x-7}{x+2}$ undefined?
[A] 7 [B] -2 [C] 0 [D] 2

3. 060319a, P.I. A.A.15
For which value of x is the expression $\frac{3x-6}{x-4}$ undefined?
[A] -4 [B] 0 [C] 4 [D] 2

4. 010607a, P.I. A.A.15
For which value of x will the fraction $\frac{3}{2x+4}$ be undefined?
[A] 2 [B] -4 [C] 0 [D] -2

5. 080610a, P.I. A.A.15
For which value of x is the expression $\frac{3}{x-2}$ undefined?
[A] -2 [B] 3 [C] 2 [D] 0

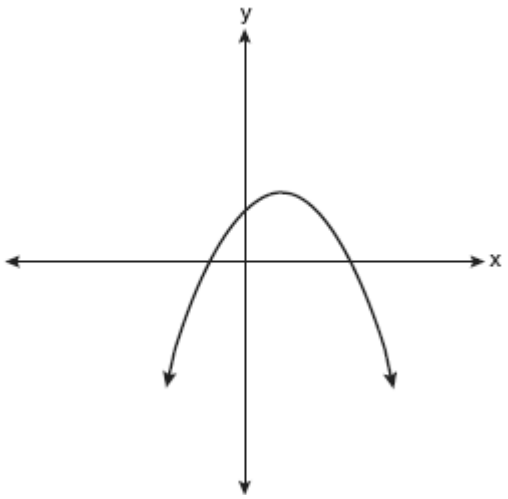
6. 010822a, P.I. A.A.15
For which value of x is the expression $\frac{6-x}{x+2}$ undefined?
[A] 2 [B] -2 [C] 0 [D] 6

7. fall0728ia, P.I. A.A.15
For which value of x is $\frac{x-3}{x^2-4}$ undefined?
[A] 4 [B] 3 [C] 0 [D] -2

8. 010716a, P.I. A.A.15
Which expression is undefined when $w = 3$?
[A] $\frac{w+1}{w^2-3w}$ [B] $\frac{3w}{3w^2}$
[C] $\frac{w-3}{w+1}$ [D] $\frac{w^2+2w}{5w}$

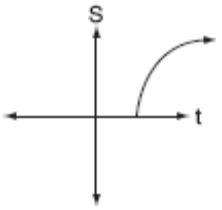
Part 2: Types of Functions

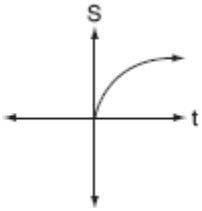
9. fall0717ia, P.I. A.G.4
Which type of graph is shown in the diagram below?

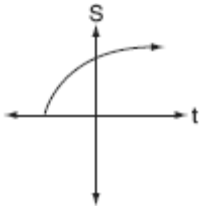


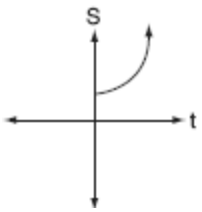
[A] absolute value [B] quadratic
[C] linear [D] exponential

10. 060718b, P.I. A2.A.13
The formula $S = 20\sqrt{t+273}$ is used to determine the speed of sound, *S*, in meters per second, near Earth's surface, where *t* is the surface temperature, in degrees Celsius. Which graph best represents this function?

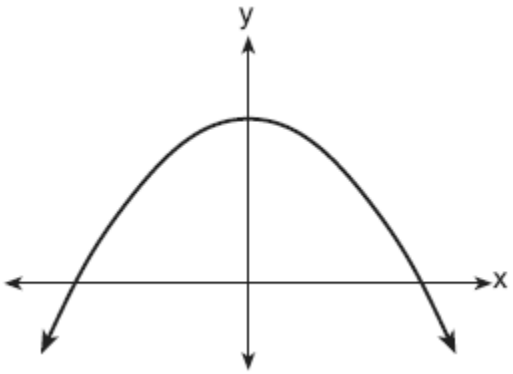
[A] 

[B] 

[C] 

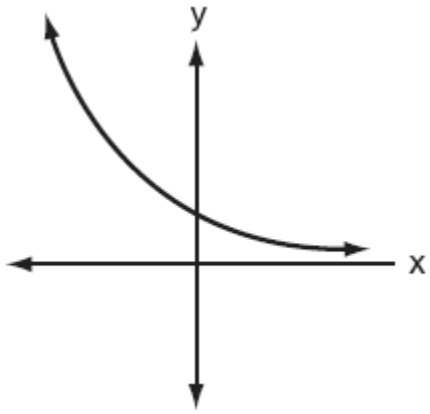
[D] 

11. 060703b, P.I. A.G.4
Which equation is best represented by the accompanying graph?



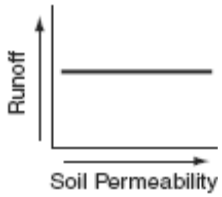
[A] $y = 6x + 1$ [B] $y = 6x^2$
[C] $y = -x^2 + 1$ [D] $y = 6^x$

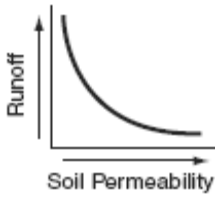
12. 010701b, P.I. A.G.4
Which equation best represents the accompanying graph?

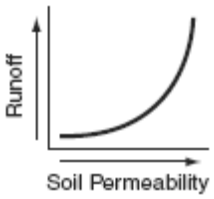


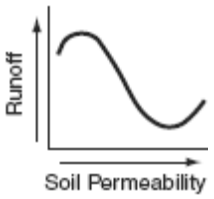
[A] $y = x^2 + 2$ [B] $y = -2^x$
[C] $y = 2^{-x}$ [D] $y = 2^x$

13. 010603b
Which graph shows that soil permeability varies inversely to runoff?

[A] 

[B] 

[C] 

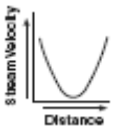
[D] 

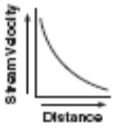
14. 060414b
Which function is symmetrical with respect to the origin?

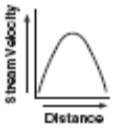
[A] $y = -\frac{5}{x}$ [B] $y = 5^x$

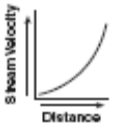
[C] $y = \sqrt{x+5}$ [D] $y = |5-x|$

15. 060408b
Which graph represents an inverse variation between stream velocity and the distance from the center of the stream?

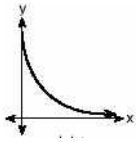
[A] 

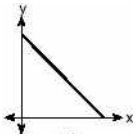
[B] 

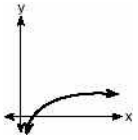
[C] 

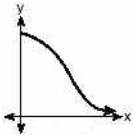
[D] 

16. 080304b, P.I. A.G.4
The strength of a medication over time is represented by the equation $y = 200(1.5)^{-x}$, where *x* represents the number of hours since the medication was taken and *y* represents the number of micrograms per millimeter left in the blood. Which graph best represents this relationship?

[A] 

[B] 

[C] 

[D] 

17. 010310b
For a rectangular garden with a fixed area, the length of the garden varies inversely with the width. Which equation represents this situation for an area of 36 square units?

[A] $x - y = 36$ [B] $x + y = 36$

[C] $y = 36x$ [D] $y = \frac{36}{x}$

18. 060104b, P.I. A2.A.5
Camisha is paying a band $330 to play at her graduation party. The amount each member earns, *d*, varies inversely as the number of members who play, *n*. The graph of the equation that represents the relationship between *d* and *n* is an example of

[A] a line [B] a parabola

[C] an ellipse [D] a hyperbola

[1] B

[2] B

[3] C

[4] D

[5] C

[6] B

[7] D

[8] A

[9] B

[10] C

[11] C

[12] C

[13] B

[14] A

[15] B

[16] A

[17] D

[18] D