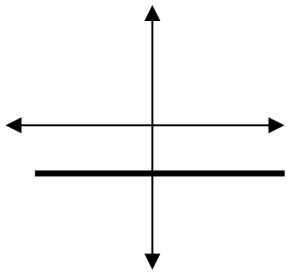
Pre-Cal Review

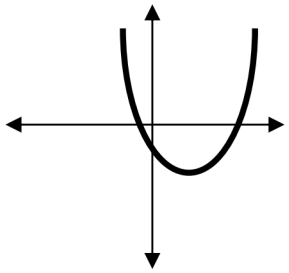
Name: _____ **Date:** _____

1. Which graph does *not* represent a function?

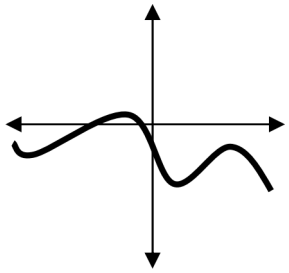
A.



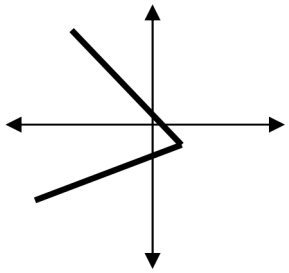
B.



C.

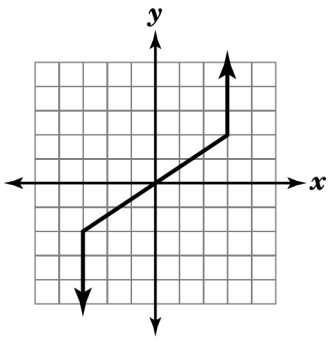


D.

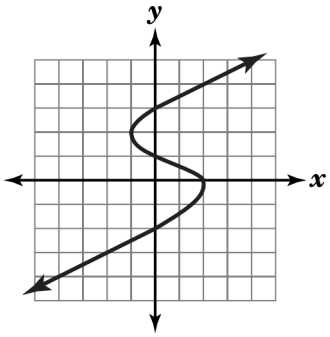


2. Which of these graphs shows a functional relationship?

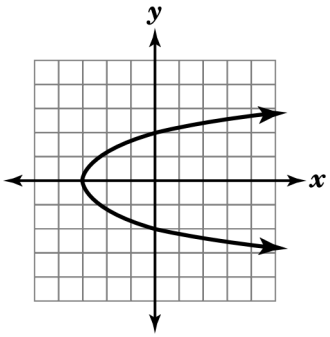
A.



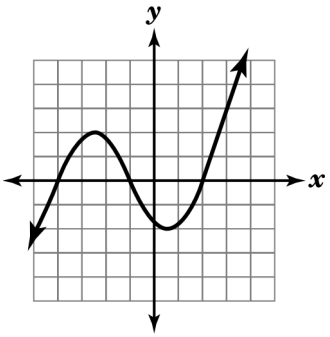
B.



C.



D.



3. Which table represents y as a function of x?

A.

x	1	2	3	2	1
y	1	2	3	4	5

B.

x	4	5	4	3	2
y	-6	-5	-4	-3	-2

C.

x	8	7	6	5	4
y	-1	2	-1	2	-1

D.

x	3	4	3	2	3
y	0	1	2	1	3

4. Which relation is a function?

A. $\{(-1, 3), (-2, 6), (0, 0), (-2, -2)\}$

B. $\{(-2, -2), (0, 0), (1, 1), (2, 2)\}$

C. $\{(4, 0), (4, 1), (4, 2), (4, 3)\}$

D. $\{(7, 4), (8, 8), (10, 8), (10, 10)\}$

5. Which expression represents $f(g(x))$ if $f(x) = x^2 - 1$ and $g(x) = x + 3$?

A. $x^3 + 3x^2 - x - 3$ B. $x^2 + 6x + 8$

C. $x^2 + x + 2$ D. $x^2 + 8$

6. If $f(x) = x^2 - x$ and $g(x) = x - 1$, what is $f(g(x))$?

A. $x^2 - x - 1$ B. $x^2 - x - 2$

C. $x^2 - 3x + 2$ D. $x^2 - 3x + 1$

7. If $f(x) = x^2 + 4x - 12$, find $f(2)$.

8. Which function is the inverse of $f(x) = x^3 + 6$?

A. $f^{-1}(x) = x^3 + 6$ B. $f^{-1}(x) = \sqrt[3]{x} + 6$

C. $f^{-1}(x) = \sqrt[3]{x} - 6$ D. $f^{-1}(x) = \sqrt[3]{x - 6}$

9. If $17^m = 6$, what is m?

A. $m = \dfrac{\log 6}{\log 17}$ B. $m = \log 6 - \log 17$

C. $m = \dfrac{\log 17}{\log 6}$ D. $m = \log \dfrac{6}{17}$

10. What is the solution to the equation $5^x = 17$?

A. $x = 2$

B. $x = \log_{10} 2$

C. $x = \log_{10} 17 + \log_{10} 5$

D. $x = \dfrac{\log_{10} 17}{\log_{10} 5}$

11. If $y = 4(1.6)^x$, what is the *approximate* value of x when $y = 12$?

A. 2.5 B. 2.3 C. 2.1 D. 1.9

12. If $\log_x y = 2$, which of the following is true?

A. $y = x^2$ B. $y = 2x$

C. $x = y^2$ D. $x = 2y$

13. Isabel began training for a marathon by running 3 miles during her first week. Each week, she increased the distance she ran by 10% of the previous week's distance.

Which function represents the number of miles she ran during the nth week?

A. $f(n) = 3(1.1)^{n-1}$

B. $f(n) = 3 + 1.1^{n-1}$

C. $f(n) = 3(1.1)(n - 1)$

D. $f(n) = 3 + (1.1)(n - 1)$

14. Which of the following functions will represent \$500 placed into a mutual fund yielding 10% per year for 4 years.

A. $A = 500(.10)^4$ B. $A = 500(1.1)^4$

C. $A = 500(4)(.10)$ D. $A = 500(1.04)^{10}$

15. In 1984, the population of Greensboro, N.C. was 197,910. According to the U.S. Census Bureau, Greensboro has been growing at the rate of 6.9% annually since 1984. What equation models the population of Greensboro t years after 1984?

A. $y = 197,910(1 + 0.69)^t$

B. $y = 197,910(1 + 69)^t$

C. $y = 197,910(1 + 6.9)^t$

D. $y = 197,910(1 + 0.069)^t$

16. In 1997 the population of a small town was 700. If the annual rate of increase is about 0.8%, which value below expresses the population five years later?

A. $5(700)(0.008)$ B. $5(700)(1.008)$

C. $(700)(0.008)^5$ D. $(700)(1.008)^5$

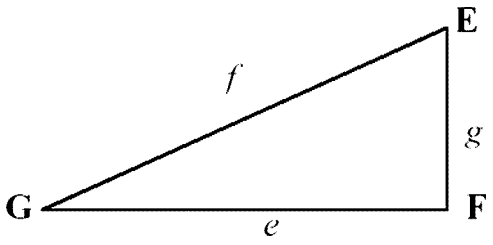
17. A couple wants to buy a house in five years. They need to save a down payment of $8,000. They deposit $1,000 in a bank account earning 3.25% interest, compounded quarterly. How much will they need to save each month in order to meet their goal?

18. James purchased a truck for $25,900. The value of the truck decreases by 12% per year. What will be the *approximate* value 8 years after the purchase?

A. $3,100 B. $7,200

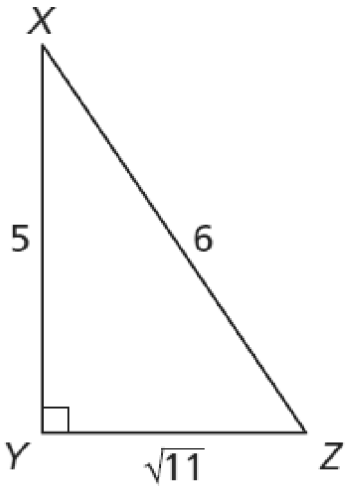
C. $9,300 D. $22,800

19. What is the tangent of $\angle G$ in the triangle below?



A. $\frac{g}{e}$ B. $\frac{e}{g}$ C. $\frac{g}{f}$ D. $\frac{e}{f}$

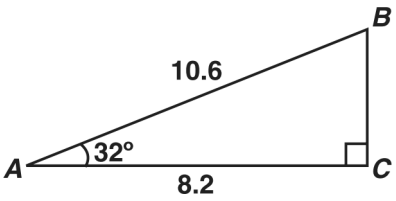
20. Study the triangle below.



What is the cosine of $\angle X$?

A. $\frac{5}{6}$ B. $\frac{\sqrt{11}}{6}$ C. $\frac{\sqrt{11}}{5}$ D. $\frac{6}{5}$

21. Right triangle ABC is pictured below.



Which equation gives the correct value for BC?

A. $\sin 32^\circ = \frac{BC}{8.2}$ B. $\cos 32^\circ = \frac{BC}{10.6}$

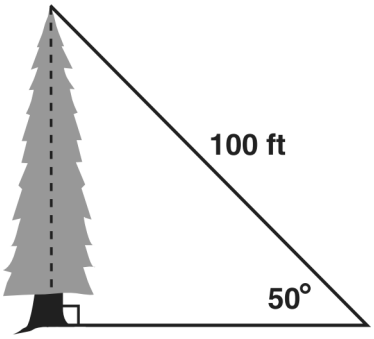
C. $\tan 58^\circ = \frac{8.2}{BC}$ D. $\sin 58^\circ = \frac{BC}{10.6}$

22. A 24-foot ladder is leaning against a building. The base of the ladder is 9 feet from the building. If α is the angle formed by the ladder and the ground, which equation could be used to find the measure of α?

A. $\sin \alpha = \frac{24}{9}$ B. $\cos \alpha = \frac{9}{24}$

C. $\cos \alpha = \frac{24}{9}$ D. $\sin \alpha = \frac{9}{24}$

23. What is the approximate height, in feet, of the tree in the figure below?



$\sin 50^\circ \approx 0.766$
$\cos 50^\circ \approx 0.643$
$\tan 50^\circ \approx 1.192$

A. 64.3 B. 76.6 C. 119.2 D. 130.5

24. What value of x in the interval $0^\circ \leq x \leq 180^\circ$ satisfies the equation $\sqrt{3}\tan x + 1 = 0$?

A. -30° B. 30° C. 60° D. 150°

25. If $\sin \beta = \frac{1}{2}$ and $90^\circ < \beta < 180^\circ$, what is the value of $\cos \beta$?

A. $-\frac{\sqrt{3}}{2}$ B. $-\frac{1}{2}$ C. $\frac{1}{2}$ D. $\frac{\sqrt{3}}{2}$

26. Which expression is equivalent to $(\sec\theta)\left(\dfrac{\sin\theta}{\tan\theta}\right)$?

A. $\cos^2\theta - \sin^2\theta$ B. $\sin^2\theta - \cos^2\theta$

C. $\cot^2\theta - \csc^2\theta$ D. $\csc^2\theta - \cot^2\theta$

27. Find the value of x between 0° and 360° which satisfies the equation $\sin^2 x + 3\sin x + 2 = 0$.

28. In the interval $0 \le x < 2\pi$, the solutions of the equation $\sin^2 x = \sin x$ are

A. $0,\ \frac{\pi}{2},\ \pi$ B. $\frac{\pi}{2},\ \frac{3\pi}{2}$

C. $0,\ \frac{\pi}{2},\ \frac{3\pi}{2}$ D. $\frac{\pi}{2},\ \pi,\ \frac{3\pi}{2}$

29. The expression $(\cot\theta)(\sec\theta)$ is equivalent to

A. $\tan\theta$ B. $\cos\theta$ C. $\cot\theta$ D. $\csc\theta$

30. The expression $\dfrac{\cot\theta}{\csc\theta}$ is equivalent to

A. $\dfrac{\cos\theta}{\sin^2\theta}$ B. $\sin\theta$ C. $\tan\theta$ D. $\cos\theta$

Pre-Cal Review 1/14/2019

1.
Answer: D

2.
Answer: D

3.
Answer: C

4.
Answer: B

5.
Answer: B

6.
Answer: C

7.
Answer:

8.
Answer: D

9.
Answer:

10.
Answer: D

11.
Answer:

12.
Answer: A

13.
Answer: A

14.
Answer:

15.
Answer:

16.
Answer: D

17.
Answer:

18.
Answer: C

19.
Answer: A

20.
Answer: A

21.
Answer: C

22.
Answer: B

23.
Answer: B

24.
Answer: D

25.
Answer: A

26.
Answer: D

27.
Answer: 270°

28.
Answer: A

29.
Answer: D

30.
Answer: D