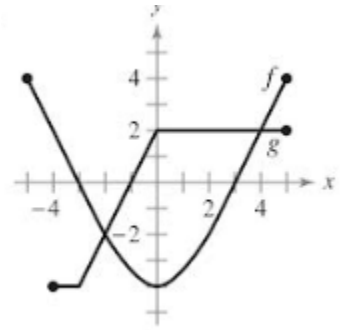
1. Find $f(-1),\ f(0),\ f(1),\ f(8)$. Then graph the function.

A. $f(x) = \begin{cases} x+3, & -2 \le x < 1 \\ 5, & x = 1 \\ -x+2, & x > 1 \end{cases}$

B. $f(x) = \begin{cases} \frac{1}{x}, & x < 0 \\ \sqrt[3]{x}, & x \ge 0 \end{cases}$

2. Use the graph to answer the following questions.




A. Find $f(0)$and $g(4)$
B. For what value(s) of $x$ is $g(x) = 0$?
C. For what value(s) of $x$ is $f(x) > 0$?
D. For what value(s) of $x$ is $f(x) > g(x)$?

3. True or false?
A. The function $f(x) = x^2$ is odd and increasing on the interval $(-\infty, \infty)$.
B. The $x$-intercepts of a function are called the real zeros of the function.
C. It is possible for two lines with positive slopes to be perpendicular to each other.
D. The graph of $y = -f(x)$ is the reflection of the graph of $y = f(x)$ about the $x$-axis.
E. If $y = \log_a x$, then $y = a^x$
F. $\ln e = 0$

4. Find each.

A. $\tan\frac{\pi}{4}$
B. $\sin\left(-\frac{3\pi}{2}\right)$
C. $\csc\left(-\frac{\pi}{3}\right)$
D. $\cos\frac{\pi}{6}$
E. $\sec\frac{17\pi}{3}$
F. $\cot\left(-\frac{5\pi}{6}\right)$

5. Match the trigonometric expression on the left with its simplified form on the right.

| | |
|---|---|
| A. $\sec x \cos x$ | i. $\tan x$ |
| B. $\frac{\sec^2 x - 1}{\sin^2 x}$ | ii. $\sec x$ |
| C. $\cot x \sec x$ | iii. $-1$ |
| D. $\sec^4 x - \tan^4 x$ | iv. $\sec^2 x + \tan^2 x$ |
| E. $\tan x \csc x$ | v. $\csc x$ |
| F. $\cot^2 x - \csc^2 x$ | vi. $1$ |
| G. $\sin x \sec x$ | vii. $\csc^2 x$ |
| H. $\cot^2 x + 1$ | viii. $\sec^2 x$ |

6. Solve each equation on the interval $[0, 2\pi]$.

A. $2 \sin x + 1 = 0$

B. $\cos^3 x = \cos x$

C. $\sin x \cos x = 3 \cos x$

D. $\sin^2 x + \cos x + 1 = 0$

7. Change the left side of each equation to show that it is equal to the right side. Be sure you can justify each step.

A. $\frac{\frac{1}{x+4} - \frac{1}{4}}{x} = \frac{-1}{4(x+4)}$

B. $\frac{\sqrt{x+1} - 2}{x-3} = \frac{1}{\sqrt{x+1}+2}$

C. $\frac{(x^2+1)2e^x - 2e^x \cdot 2x}{(x^2+1)^2} = \frac{2e^x(x^2-2x+1)}{(x^2+1)^2}$

D. $3\left(\frac{3x^2-2}{2x+3}\right)^2 \cdot \frac{(2x+3)\cdot 6x - (3x^2-2)\cdot 2}{(2x+3)^2} = \frac{6(3x^2-2)^2(3x^2+9x+2)}{(2x+3)^4}$

E. $x \cdot \frac{1}{2}(1-x^2)^{-\frac{1}{2}} \cdot (-2x) + (1-x^2)^{\frac{1}{2}} \cdot 1 = \frac{1-2x^2}{\sqrt{1-x^2}}$

F. $\frac{(x^4+4)^{\frac{1}{2}} - x \cdot \frac{1}{2}(x^4+4)^{-\frac{1}{2}} \cdot 4x^3}{x^4+4} = \frac{4-x^4}{(x^4+4)^{\frac{3}{2}}}$