

1. Find the value of each if $f(x) = 2x^2 - x + 4$ and $g(x) = x - 2$

a. $f(g(2))$

b. $g(f(3))$

c. $f(g(x))$

d. $g(f(x^2))$

2. A cannon ball is launched from a cliff over the ocean and follows the path: $y = -16x^2 + 64x + 80$ where y represents the elevation of the cannon ball in feet and x represents the seconds since being launched. You may use a graphing calculator for this problem.

a. How long will it take for the cannon ball to hit the ground?

b. What is the maximum height the cannon ball will reach?

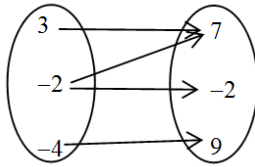
c. How long will it take for the cannon ball to reach its maximum height?

d. How high is the cliff above the ocean?

e. If the target is the crow's nest of a pirate's ship that is 40 feet above the water, how long will it take to hit the crow's nest?

3. Determine if the following are functions. State the domain and range for each.

a.



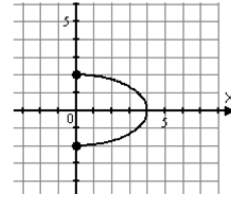
Function (Y or N):

Domain:

Range:

1 to 1 (Y or N):

b.



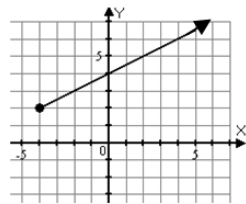
Function (Y or N):

Domain:

Range:

1 to 1 (Y or N):

c.



Function (Y or N):

Domain:

Range:

1 to 1 (Y or N):

d.

$\{(6, -3), (7, 4), (-7, -2), (0, -2)\}$

Function (Y or N):

Domain:

Range:

1 to 1 (Y or N):

4. Write the equation of the line that is parallel to $y = 3x + 5$ and goes through $(-1, 1)$.

5. Write the equation of the line that is perpendicular to $y = 3x + 5$ and goes through $(-9, 2)$