

Math 90 - Quiz # 7

Name Key

Solve for x: $4 + \sqrt{2x} = x$

$-4 \quad -4$

$$\sqrt{2x} = x - 4$$

undo root
by squaring

$$(\sqrt{2x})^2 = (x-4)^2$$

$$2x = x^2 - 8x + 16$$

$$0 = x^2 - 10x + 16$$

$$0 = (x-8)(x-2)$$

$x = 8, 2 \leftarrow$ check both

check $x = 8$

$$\sqrt{2 \cdot 8} = 8 - 4$$

$$\sqrt{16} = 4 \checkmark$$

check $x = 2$

$$\sqrt{2 \cdot 2} = 2 - 4$$

$$2 \neq -2 \text{ x no}$$

$x = 8$ is only good solution

Math 90 – Quiz # 8

Name Key

1. For $f(x) = -2x^2 - 4x - 6$

a) What direction does it face?

down

b) Give the coordinates of the vertex

$$h = x = \frac{-b}{2a} = \frac{-(-4)}{2(-2)} = -1$$

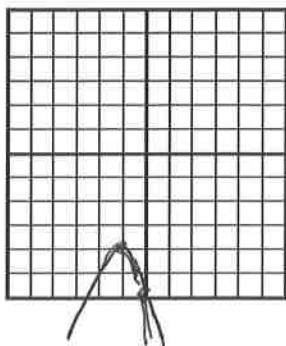
$$k = f(-1) = -2(-1)^2 - 4(-1) - 6 = -2 + 4 - 6 = -4$$

c) Find $f(0)$, and write the ordered pair for this point

$$f(0) = \cancel{4} - 2(0)^2 - 4(0) - 6 = -6$$

$(0, -6)$

d) Sketch the graph:



2. (bonus question – 2 points) Last week, we timed the pendulum period (one full “cycle” back and forth) to be 7.28 seconds. If $g = 32 \text{ ft/sec}^2$, find the length of the pendulum cord.

$$T = 2\pi \sqrt{\frac{l}{g}} \Rightarrow l = \frac{T^2}{4\pi^2} g = \frac{(7.28)^2 \cdot (32)}{4(\pi)^2} \approx 43 \text{ ft.}$$

Math 90 - Quiz # 9

Name Key

Given 2 functions, $f(x) = 2x + 3$ and $g(x) = \frac{1}{2}x + 3$

a) Find $f \circ g(x)$

$$f(g(x)) = 2\left(\frac{1}{2}x + 3\right) + 3 = x + 6 + 3$$
$$f \circ g(x) = x + 9$$

b) Find $g \circ f(x)$

$$g(f(x)) = \frac{1}{2}(2x + 3) + 3$$
$$g \circ f(x) = x + \frac{3}{2} + 3 = x + \frac{9}{2}$$

or $x + 4\frac{1}{2}$

c) Are $f(x)$ and $g(x)$ inverses?

no $f \circ g(x) \neq x$ also $g \circ f(x) \neq x$
(one "failure" is enough to decide)

d) Find $f^{-1}(x)$

$$y = f(x) = 2x + 3$$
$$x = \frac{y - 3}{2}$$

$$y = f^{-1}(x) = \frac{x - 3}{2}$$

$$\frac{x - 3}{2} = \frac{y}{2}$$