

Math 3 Honors Unit 1 - Functions and Inverses
Frequently Missed Test Questions

Name _____

1. Given $f(x) = -3x + 15$ and $g(x) = 6x^2 + x + 9$, find $2[g(1) - f(2)]$

$$g(1) = 6(1)^2 + (1) + 9$$

$$= 6 + 1 + 9 = 16$$

$$16 - 9$$

$$= 7$$

$$f(2) = -3(2) + 15$$

$$= -6 + 15 = 9$$

$$2[7] = 14$$

2. Solve using any method $f(x) = -(x-2)^2 + 7$

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

$$f(x) = -\frac{1}{4}x - 4$$

3. The Beach Resort is offering two weekend specials. One includes a 2-night stay with 3 meals and costs \$200. The other includes a 3-night stay with 5 meals and costs \$305. Use any method!

a. What is the cost of a 1-night stay?

$$y = \frac{-2x + 200}{3}$$

$$\rightarrow 2x + 3y = 200$$

$$\rightarrow 3x + 5y = 305$$

$$y = \frac{-3x + 305}{5}$$

$$\text{night: } x = 85$$

$$\text{meal: } y = 10$$

b. What is the cost per meal?

4. Solve: $|x-5| + 3 > 5$

$$|x-5| > 2$$

$$x-5 > 2 \text{ or } x-5 < -2$$

$$x > 7 \text{ or } x < 3$$

5. a. Find the inverse: $h(x) = -\frac{1}{3}x^2 + 1$

$$x = -\frac{1}{3}y^2 + 1$$

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

$$-3(x-1) = y^2$$

$$\sqrt{-3x+3} = y$$

$$\pm \sqrt{-3x+3} = h^{-1}(x)$$

b. Is $h^{-1}(x)$ is a function? Explain how you know.

no bc graph of inverse fails VLT

no bc graph of orig. fails HLT

6. Show that $y = \frac{1}{2}x - 9$ and $y = 2x + 18$ are inverse functions by using functions compositions.

$$\frac{1}{2}(\frac{1}{2}x - 9) - 9 = \frac{1}{4}x - \frac{9}{2} - 9 = \frac{1}{4}x - \frac{27}{2}$$

$$2(\frac{1}{2}x - 9) + 18 = x - 9 + 18 = x$$