**Module 1 Test Review**

(Functions and Their Inverses 1.1 – 1.5)

**Part I**: *Multiple Choice*

1. If $f\left(x\right)=\frac{1}{2}x^{2}$, then $f\left(a+b\right)=$

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |

2. You have been asked to solve $\sqrt[2]{(x+3)}=5$ for *x*. What would your first step be? Now solve the equation.

3. Assume $f(x)$ and $g(x)$ are inverses of one another and drawn on the same graph with the same scale on both the horizontal and vertical axis. What is true of the graph?

4. If $8^{x}=16$, then x= \_\_\_\_\_\_\_\_

5. If $125^{2x+5}=125^{x+3}$, then x= \_\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |

6. Complete the definition of Logarithm: *For all positive numbers a, where a ≠ 1, and all positive numbers x,* $m=log\_{n}p$ *means the same as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.*

7. Name three different ways to write $p^{6}$.

8. Find the inverse of $f\left(x\right)=6^{x}$ ?

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |

9. Name three different ways to write $\sqrt[4]{x^{24}}$ ?

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |

10. a. Draw a graph of $f\left(x\right)and g\left(x\right)where f and g are inverses of each other.$



b. Draw a graph of $f\left(x\right)and g\left(x\right)where f and g are not inverses of each other.$



|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |

Simplify (on 14 and 15 use definition of log)

|  |  |  |  |
| --- | --- | --- | --- |
| \_\_\_\_\_\_ 11. | $$a^{x}∙a$$ |  |  |
| \_\_\_\_\_\_ 12. | $$\frac{b^{x}}{b}$$ |  |  |
| \_\_\_\_\_\_ 13. | $$\sqrt{c^{2x}}$$ |  |  |
| \_\_\_\_\_\_ 14. | $$d^{x}=3$$ |  |  |
| \_\_\_\_\_\_ 15. | $$e^{2}=f$$ |  |  |

16. Find $f^{-1}\left(x\right)$ if $f\left(x\right)=4x+3$.

17. Simplify $\frac{b^{8}}{b} × \sqrt[4]{b^{12}}$. Write your answer in exponential form with positive exponents.

18. Assume that $g(x)$ is the inverse function of $f(x)$. What would $f(g\left(x\right))$ equal?

**For questions 19 – 20, use the following equations:**

$f\left(x\right)=x$ **,** $\left(x\right)=3x+4$ **, and** $h\left(x\right)=5x^{2}$

19. Find $f\left(a+b\right)+g\left(a+b\right)+h(a+b)$

20. Find $(g∘h)(x)$