Math 3H Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Per:\_\_\_

9.1 Combine and Evaluate Functions

Find an algebraic expression for h(x) and determine its domain.

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| 1. $f\left(x\right)=\sqrt{x-4}+2 and g\left(x\right)=-3x^{2}$1. $h\left(x\right)=\left(f+g\right)\left(x\right)$
2. $h\left(x\right)=\left(f-g\right)\left(x\right)$
3. $h\left(x\right)=\left(fg\right)\left(x\right)$
4. $h\left(x\right)=\left(\frac{f}{g}\right)(x)$
 | 2. $f\left(x\right)=4^{x-2} and g\left(x\right)=\sqrt{2x}$1. $h\left(x\right)=f\left(x\right)+g\left(x\right)$
2. $h\left(x\right)=g\left(x\right)-f\left(x\right)$
3. $h\left(x\right)=f\left(x\right)∙g\left(x\right)$
4. $h\left(x\right)=g\left(x\right)÷f\left(x\right)$
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| 3. $f\left(x\right)=x^{2}-5x-6 and g\left(x\right)=-3x+1$1. $h\left(x\right)=\left(f+g\right)(x)$
2. $h\left(x\right)=\left(g-f\right)\left(x\right)$
3. $h\left(x\right)=\left(fg\right)\left(x\right)$
4. $h\left(x\right)=\left(\frac{g}{f}\right)\left(x\right)$
 | 4. $f\left(x\right)=x^{3}-x^{2} and g\left(x\right)=x^{2}-7x+6$1. $h\left(x\right)=f\left(x\right)+g\left(x\right)$
2. $h\left(x\right)=f\left(x\right)-g\left(x\right)$
3. $h\left(x\right)=\left(fg\right)\left(x\right)$
4. $h\left(x\right)=\left(\frac{f}{g}\right)\left(x\right)$
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| Let $a\left(x\right)=x^{2}-2, b\left(x\right)=\sqrt{x+1}, c\left(x\right)=5^{x-3}-2, d\left(x\right)=2\cos(x), and f\left(x\right)=\frac{x}{x-4}.$ Evaluate each of the following. |
| 5. $d\left(π\right)+3f\left(2\right)$ | 6. $-2c\left(3\right)+f\left(1\right)$ | 7. $a\left(-2\right)+b\left(3\right)$ |
| 8. $4d\left(2π\right)-b\left(8\right)$ | 9. $a\left(-3\right)-c\left(4\right)$ | 10. $a\left(0\right)-4f\left(0\right)$ |
| 11. $c\left(2\right)∙b\left(-1\right)$ | 12. $d\left(\frac{π}{3}\right)∙a\left(-3\right)$ | 13. $f\left(5\right)∙c\left(4\right)$ |
| 14. $\frac{a\left(-2\right)}{3b\left(0\right)}$ | 15. $\frac{f\left(3\right)}{a\left(1\right)}$ | 16.$\frac{c\left(1\right)}{d\left(-π\right)}$  |
| Let $f\left(x\right)=2x^{2}+1, g\left(x\right)=\sqrt{x-2}, and h\left(x\right)=\frac{x-3}{x-5}$. Evaluate each composite function. |
| 17. $\left(fg\right)∘\left(6\right)$ | 18. $(g∘f)(2)$ | 19. $(f∘h)(4)$ |
| 20. $(h∘f)(0)$ | 21. $\left(g∘h\right)\left(6\right)$ | 22. $(h∘g)(11)$ |
| 23. $(f∘f)(-1)$ | 24. $(g∘g)(18)$ | 25. $(h∘h)(-1)$ |
| Find the indicated composite function and its domain. |
| 26. $f\left(x\right)=x-8 and g\left(x\right)=\frac{1}{x-7}$1. $h\left(x\right)=\left(f∘g\right)\left(x\right)$
2. $h\left(x\right)=\left(g∘f\right)\left(x\right)$
3. $h\left(x\right)=\left(f∘f\right)\left(x\right)$
4. $h\left(x\right)=(g∘g)(x)$
 | 27. $f\left(x\right)=5^{x-4} and g\left(x\right)=x^{2}-4$1. $h\left(x\right)=\left(f∘g\right)\left(x\right)$
2. $h\left(x\right)=\left(g∘f\right)\left(x\right)$
3. $h\left(x\right)=\left(f∘f\right)\left(x\right)$
4. $h\left(x\right)=(g∘g)(x)$
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| 28. $f\left(x\right)=\sqrt{x-6} and g\left(x\right)=x^{2}-3$1. $h\left(x\right)=\left(f∘g\right)\left(x\right)$
2. $h\left(x\right)=\left(g∘f\right)\left(x\right)$
3. $h\left(x\right)=\left(f∘f\right)\left(x\right)$
4. $h\left(x\right)=(g∘g)(x)$
 | 29. $f\left(x\right)=\left|x-5\right|-2 and g\left(x\right)=-2\sin(x)$1. $h\left(x\right)=\left(f∘g\right)\left(x\right)$
2. $h\left(x\right)=\left(g∘f\right)\left(x\right)$
3. $h\left(x\right)=\left(f∘f\right)\left(x\right)$
4. $h\left(x\right)=(g∘g)(x)$
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| 30. A balloon’s radius can be modeled by the equation $r\left(t\right)=0.05t+4$, where t is the time in seconds and r is measured in centimeters. The volume of a sphere is $V\left(r\right)=\frac{4}{3}πr^{3}$. Write the formula for $(V∘r)(t)$. Find the volume of the balloon at 30 seconds. |