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Date _____
Pre Calculus

Dilating Functions

State the transformations that were performed on $f(x)$ to produce $g(x)$

1. $g(x)=2f(x)$

vertical stretch by a scale factor of 2

2. $g(x)=f(2x)$

horizontal ~~stretch~~ shrink/compression by a scale factor of $\frac{1}{2}$

3. $g(x)=\frac{1}{3}f(x)$

vertical shrink by a scale factor of $\frac{1}{3}$

4. $g(x)=f\left(\frac{1}{3}x\right)$

horizontal stretch by a scale factor of 3

5. $g(x)=f(4x)$

horizontal compression by a scale factor of $\frac{1}{4}$

6. $g(x)=\frac{2}{5}f(x)$

vertical shrink by a scale factor of $\frac{2}{5}$

7. $g(x)=f\left(\frac{1}{5}x\right)$

horizontal stretch by a scale factor of 5

8. $g(x)=7f(x)$

vertical stretch by a scale factor of 7

9. $g(x)=f(3x)$

horizontal compression by a scale factor of $\frac{1}{3}$

10. $g(x)=2f(x-1)-3$

vertical stretch by a scale factor of 2; right 1; down 3

11. $g(x)=f(2(x+1))-4$

horizontal compression by a scale factor of $\frac{1}{2}$; left 1; down 4

12. $g(x) = -f\left(\frac{1}{3}(x-5)\right)+1$

reflection over x-axis, horizontal stretch by scale factor 3, right 5, up 1

13. $g(x) = -\frac{1}{2}f(x+5)$

vertical shrink by scale factor $\frac{1}{2}$, reflection over x-axis, left 5

14. $g(x) = 3f(-2(x+1))-5$

vertical stretch by scale factor 3, horizontal compression by scale factor of 2, left 1, reflection over y-axis, down 5

15. $g(x) = -f(4(x+3))+1$

horizontal compression by a scale factor of $\frac{1}{4}$, reflection over x-axis, left 3, up 1

State the transformations that were applied to the parent function $f(x)=x^2$

16. $f(x) = -2(3)^{x+1}-4$

$f(x)=3^x$, vertical stretch by a scale factor of 2, reflection over x-axis, left 1, down 4

17. $f(x) = -\left(\frac{1}{4}(x-2)\right)^2+1$

reflection over x-axis, horizontal stretch by a scale factor of 4, right 2, up 1

18. $g(x) = \frac{2}{3}\log_4(-(x+1))-2$

$f(x)=\log x$, reflection over y-axis, vertical shrink by a scale factor of $\frac{2}{3}$, left 1, down 2

19. $f(x) = |-2(x-1)|+4$

$f(x)=|x|$, right 1, reflection over y-axis, horizontal compression by a scale factor of $\frac{1}{2}$, up 4

20. $f(x) = -\sqrt{3(x-1)}+6$

$f(x)=\sqrt{x}$, right 1, up 6, reflection over x-axis, horizontal compression by a scale factor of $\frac{1}{3}$

21. $f(x) = -2(x-1)^3$

$f(x)=x^3$, vertical stretch by a scale factor of 2, reflection over x-axis, right 1