

Name: _____

MCR3U - WS - Transformations of Functions - Equations & Descriptions

1. List the transformations produced by
 $y = f[2(x + 3)] + 2$.

2. List the transformations produced by
 $y = -f[-\frac{1}{3}(x + 4)] - 1$.

3. List the transformations produced by
 $y = f[2(x - 4)] - 5$.

4. List the transformations produced by
 $y = f[-\frac{1}{3}(x + 4)] + 5$.

5. List the transformations produced by
 $y = \frac{1}{2}f[2(x - 5)] + 4$.

6. List the transformations produced by
 $y = 2f[-\frac{1}{2}(x + 1)] + 4$.

7. List the transformations produced by
 $y = 2f[2(x + 4)] - 2$.

8. List the transformations produced by
 $y = 2f[\frac{1}{3}(x + 1)] + 5$.

9. List the transformations produced by
 $y = -\frac{1}{2}f[\frac{1}{3}(x - 1)] - 3$.

10. List the transformations produced by
 $y = f[\frac{1}{2}(x + 2)] + 3$.

11. List the transformations produced by
 $y = \frac{1}{2}f[-\frac{1}{2}(x - 2)] + 5$.

12. List the transformations produced by
 $y = \frac{1}{2}f[-(x + 3)] + 4$.

13. List the transformations produced by
 $y = 2f[-\frac{1}{3}(x + 4)] + 4$.

14. List the transformations produced by
 $y = -\frac{1}{2}f[\frac{1}{3}(x - 1)] + 1$.

15. Determine the expression, in function notation, for the following transformations:

vertical reflection:	none
vertical scaling:	vertical compression by 2
horizontal reflection:	horizontal reflection
horizontal scaling:	none
horizontal translation:	horizontal shift right by 3
vertical translation:	vertical shift up by 1

16. Determine the expression, in function notation, for the following transformations:

vertical reflection:	none
vertical scaling:	vertical compression by 2
horizontal reflection:	none
horizontal scaling:	horizontal stretch by 3
horizontal translation:	horizontal shift right by 1
vertical translation:	vertical shift down by 2

17. Determine the expression, in function notation, for the following transformations:
- | | |
|-------------------------|----------------------------|
| vertical reflection: | none |
| vertical scaling: | none |
| horizontal reflection: | none |
| horizontal scaling: | horizontal stretch by 2 |
| horizontal translation: | horizontal shift left by 3 |
| vertical translation: | vertical shift down by 3 |
18. Determine the expression, in function notation, for the following transformations:
- | | |
|-------------------------|-----------------------------|
| vertical reflection: | vertical reflection |
| vertical scaling: | vertical compression by 2 |
| horizontal reflection: | horizontal reflection |
| horizontal scaling: | horizontal stretch by 3 |
| horizontal translation: | horizontal shift right by 2 |
| vertical translation: | vertical shift up by 3 |
19. Determine the expression, in function notation, for the following transformations:
- | | |
|-------------------------|-----------------------------|
| vertical reflection: | none |
| vertical scaling: | vertical stretch by 2 |
| horizontal reflection: | none |
| horizontal scaling: | horizontal stretch by 3 |
| horizontal translation: | horizontal shift right by 3 |
| vertical translation: | vertical shift down by 1 |
20. Determine the expression, in function notation, for the following transformations:
- | | |
|-------------------------|-----------------------------|
| vertical reflection: | none |
| vertical scaling: | vertical stretch by 2 |
| horizontal reflection: | horizontal reflection |
| horizontal scaling: | horizontal stretch by 2 |
| horizontal translation: | horizontal shift right by 1 |
| vertical translation: | vertical shift up by 5 |
21. Determine the expression, in function notation, for the following transformations:
- | | |
|-------------------------|-----------------------------|
| vertical reflection: | none |
| vertical scaling: | vertical stretch by 3 |
| horizontal reflection: | horizontal reflection |
| horizontal scaling: | horizontal stretch by 2 |
| horizontal translation: | horizontal shift right by 2 |
| vertical translation: | vertical shift up by 4 |
22. Determine the expression, in function notation, for the following transformations:
- | | |
|-------------------------|----------------------------|
| vertical reflection: | none |
| vertical scaling: | none |
| horizontal reflection: | horizontal reflection |
| horizontal scaling: | horizontal stretch by 4 |
| horizontal translation: | horizontal shift left by 3 |
| vertical translation: | vertical shift down by 4 |

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Answer Section

1. ANS:
- | | |
|-------------------------|-----------------------------|
| vertical reflection: | none |
| vertical scaling: | none |
| horizontal reflection: | none |
| horizontal scaling: | horizontal compression by 2 |
| horizontal translation: | horizontal shift left by 3 |
| vertical translation: | vertical shift up by 2 |

PTS: 1

2. ANS:
- | | |
|-------------------------|----------------------------|
| vertical reflection: | vertical reflection |
| vertical scaling: | none |
| horizontal reflection: | horizontal reflection |
| horizontal scaling: | horizontal stretch by 3 |
| horizontal translation: | horizontal shift left by 4 |
| vertical translation: | vertical shift down by 1 |

PTS: 1

3. ANS:
- | | |
|-------------------------|-----------------------------|
| vertical reflection: | none |
| vertical scaling: | none |
| horizontal reflection: | none |
| horizontal scaling: | horizontal compression by 2 |
| horizontal translation: | horizontal shift right by 4 |
| vertical translation: | vertical shift down by 5 |

PTS: 1

4. ANS:
- | | |
|-------------------------|----------------------------|
| vertical reflection: | none |
| vertical scaling: | none |
| horizontal reflection: | horizontal reflection |
| horizontal scaling: | horizontal stretch by 3 |
| horizontal translation: | horizontal shift left by 4 |
| vertical translation: | vertical shift up by 5 |

PTS: 1

5. ANS:
- | | |
|-------------------------|-----------------------------|
| vertical reflection: | none |
| vertical scaling: | vertical compression by 2 |
| horizontal reflection: | none |
| horizontal scaling: | horizontal compression by 2 |
| horizontal translation: | horizontal shift right by 5 |
| vertical translation: | vertical shift up by 4 |

PTS: 1

6. ANS:
 vertical reflection: none
 vertical scaling: vertical stretch by 2
 horizontal reflection: horizontal reflection
 horizontal scaling: horizontal stretch by 2
 horizontal translation: horizontal shift left by 1
 vertical translation: vertical shift up by 4

PTS: 1

7. ANS:
 vertical reflection: none
 vertical scaling: vertical stretch by 2
 horizontal reflection: none
 horizontal scaling: horizontal compression by 2
 horizontal translation: horizontal shift left by 4
 vertical translation: vertical shift down by 2

PTS: 1

8. ANS:
 vertical reflection: none
 vertical scaling: vertical stretch by 2
 horizontal reflection: none
 horizontal scaling: horizontal stretch by 3
 horizontal translation: horizontal shift left by 1
 vertical translation: vertical shift up by 5

PTS: 1

9. ANS:
 vertical reflection: vertical reflection
 vertical scaling: vertical compression by 2
 horizontal reflection: none
 horizontal scaling: horizontal stretch by 3
 horizontal translation: horizontal shift right by 1
 vertical translation: vertical shift down by 3

PTS: 1

10. ANS:
 vertical reflection: none
 vertical scaling: none
 horizontal reflection: none
 horizontal scaling: horizontal stretch by 2
 horizontal translation: horizontal shift left by 2
 vertical translation: vertical shift up by 3

PTS: 1

11. ANS:
 vertical reflection: none
 vertical scaling: vertical compression by 2
 horizontal reflection: horizontal reflection
 horizontal scaling: horizontal stretch by 2
 horizontal translation: horizontal shift right by 2
 vertical translation: vertical shift up by 5

PTS: 1

12. ANS:
 vertical reflection: none
 vertical scaling: vertical compression by 2
 horizontal reflection: horizontal reflection
 horizontal scaling: none
 horizontal translation: horizontal shift left by 3
 vertical translation: vertical shift up by 4

PTS: 1

13. ANS:
 vertical reflection: none
 vertical scaling: vertical stretch by 2
 horizontal reflection: horizontal reflection
 horizontal scaling: horizontal stretch by 3
 horizontal translation: horizontal shift left by 4
 vertical translation: vertical shift up by 4

PTS: 1

14. ANS:
 vertical reflection: vertical reflection
 vertical scaling: vertical compression by 2
 horizontal reflection: none
 horizontal scaling: horizontal stretch by 3
 horizontal translation: horizontal shift right by 1
 vertical translation: vertical shift up by 1

PTS: 1

15. ANS:

$$y = \frac{1}{2}f[-(x - 3)] + 1.$$

PTS: 1

16. ANS:

$$y = \frac{1}{2}f\left[\frac{1}{3}(x - 1)\right] - 2.$$

PTS: 1

17. ANS:

$$y = f\left[\frac{1}{2}(x+3)\right] - 3.$$

PTS: 1

18. ANS:

$$y = -\frac{1}{2}f\left[-\frac{1}{3}(x-2)\right] + 3.$$

PTS: 1

19. ANS:

$$y = 2f\left[\frac{1}{3}(x-3)\right] - 1.$$

PTS: 1

20. ANS:

$$y = 2f\left[-\frac{1}{2}(x-1)\right] + 5.$$

PTS: 1

21. ANS:

$$y = 3f\left[-\frac{1}{2}(x-2)\right] + 4.$$

PTS: 1

22. ANS:

$$y = f\left[-\frac{1}{4}(x+3)\right] - 4.$$

PTS: 1