Solutions – Graph Transformations (A)

Describe the transformation from $y = f(x)$ to $y = f(-x + 1)$.

Reflection in the y-axis then a translation of 1 units right

Describe the transformation from $y = f(x)$ to $y = -f(x)$.

Reflection in the x-axis

Describe the transformation from $y = f(x)$ to $y = 4f(x)$.

Vertical stretch by a factor of 4

Describe the transformation from $y = f(x)$ to $y = 3f(x) + 1$.

Vertical stretch by a factor of 3 then a translation of 1 units up

Describe the transformation from $y = f(x)$ to $y = -f(x - 5)$.

Translation of 5 units right then a reflection in the x-axis

Describe the transformation from $y = f(x)$ to $y = f(x - 5)$.

Translation of 5 units right

Solutions – Graph Transformations (B)

Describe the transformation from $y = f(x)$ to $y = 2f(x) + 4$.

Vertical stretch by a factor of 2 then a translation of 4 units up

Describe the transformation from $y = f(x)$ to $y = -f(x - 2)$.

Translation of 2 units right then a reflection in the x-axis

Describe the transformation from $y = f(x)$ to $y = -f(x)$.

Reflection in the x-axis

Describe the transformation from $y = f(x)$ to $y = f(-x + 1)$.

Reflection in the y-axis then a translation of 1 units right

Describe the transformation from $y = f(x)$ to $y = f(x + 4)$.

Translation of 4 units left

Describe the transformation from $y = f(x)$ to $y = f(2x)$.

Horizontal compression by a factor of 2

Solutions – Graph Transformations (C)

Describe the transformation from $y = f(x)$ to $y = f(x + 5)$.

Translation of 5 units left

Describe the transformation from $y = f(x)$ to $y = 2f(x) + 1$.

Vertical stretch by a factor of 2 then a translation of 1 units up

Describe the transformation from $y = f(x)$ to $y = f(-x + 2)$.

Reflection in the y-axis then a translation of 2 units right

Describe the transformation from $y = f(x)$ to $y = 2f(x)$.

Vertical stretch by a factor of 2

Describe the transformation from $y = f(x)$ to $y = f(-x)$.

Reflection in the y-axis

Describe the transformation from $y = f(x)$ to $y = -f(x - 1)$.

Translation of 1 units right then a reflection in the x-axis

Solutions – Graph Transformations (D)

Describe the transformation from $y = f(x)$ to $y = f(-x + 4)$.

Reflection in the y-axis then a translation of 4 units right

Describe the transformation from $y = f(x)$ to $y = -f(x)$.

Reflection in the x-axis

Describe the transformation from $y = f(x)$ to $y = 2f(x)$.

Vertical stretch by a factor of 2

Describe the transformation from $y = f(x)$ to $y = f(x + 5)$.

Translation of 5 units left

Describe the transformation from $y = f(x)$ to $y = 2f(x) + 3$.

Vertical stretch by a factor of 2 then a translation of 3 units up

Describe the transformation from $y = f(x)$ to $y = -f(x - 1)$.

Translation of 1 units right then a reflection in the x-axis

Solutions – Graph Transformations (E)

Describe the transformation from $y = f(x)$ to $y = 2f(x) + 3$.

Vertical stretch by a factor of 2 then a translation of 3 units up

Describe the transformation from $y = f(x)$ to $y = 4f(x)$.

Vertical stretch by a factor of 4

Describe the transformation from $y = f(x)$ to $y = -f(x - 5)$.

Translation of 5 units right then a reflection in the x-axis

Describe the transformation from $y = f(x)$ to $y = f(x - 2)$.

Translation of 2 units right

Describe the transformation from $y = f(x)$ to $y = f(-x + 1)$.

Reflection in the y-axis then a translation of 1 units right

Describe the transformation from $y = f(x)$ to $y = f(-x)$.

Reflection in the y-axis

Solutions – Graph Transformations (F)

Describe the transformation from $y = f(x)$ to $y = 3f(x) + 2$.

Vertical stretch by a factor of 3 then a translation of 2 units up

Describe the transformation from $y = f(x)$ to $y = f(x + 2)$.

Translation of 2 units left

Describe the transformation from $y = f(x)$ to $y = f(3x)$.

Horizontal compression by a factor of 3

Describe the transformation from $y = f(x)$ to $y = -f(x)$.

Reflection in the x-axis

Describe the transformation from $y = f(x)$ to $y = f(-x + 1)$.

Reflection in the y-axis then a translation of 1 units right

Describe the transformation from $y = f(x)$ to $y = -f(x - 2)$.

Translation of 2 units right then a reflection in the x-axis

Solutions – Graph Transformations (G)

Describe the transformation from $y = f(x)$ to $y = -f(x - 2)$.

Translation of 2 units right then a reflection in the x-axis

Describe the transformation from $y = f(x)$ to $y = 2f(x)$.

Vertical stretch by a factor of 2

Describe the transformation from $y = f(x)$ to $y = 3f(x) + 4$.

Vertical stretch by a factor of 3 then a translation of 4 units up

Describe the transformation from $y = f(x)$ to $y = f(x + 5)$.

Translation of 5 units left

Describe the transformation from $y = f(x)$ to $y = -f(x)$.

Reflection in the x-axis

Describe the transformation from $y = f(x)$ to $y = f(-x + 4)$.

Reflection in the y-axis then a translation of 4 units right

Solutions – Graph Transformations (H)

Describe the transformation from $y = f(x)$ to $y = f(-x + 4)$.

Reflection in the y-axis then a translation of 4 units right

Describe the transformation from $y = f(x)$ to $y = f(x + 5)$.

Translation of 5 units left

Describe the transformation from $y = f(x)$ to $y = 3f(x) + 3$.

Vertical stretch by a factor of 3 then a translation of 3 units up

Describe the transformation from $y = f(x)$ to $y = -f(x)$.

Reflection in the x-axis

Describe the transformation from $y = f(x)$ to $y = -f(x - 1)$.

Translation of 1 units right then a reflection in the x-axis

Describe the transformation from $y = f(x)$ to $y = f(2x)$.

Horizontal compression by a factor of 2

Solutions – Graph Transformations (I)

Describe the transformation from $y = f(x)$ to $y = f(-x + 3)$.

Reflection in the y-axis then a translation of 3 units right

Describe the transformation from $y = f(x)$ to $y = 3f(x) + 1$.

Vertical stretch by a factor of 3 then a translation of 1 units up

Describe the transformation from $y = f(x)$ to $y = f(4x)$.

Horizontal compression by a factor of 4

Describe the transformation from $y = f(x)$ to $y = -f(x - 5)$.

Translation of 5 units right then a reflection in the x-axis

Describe the transformation from $y = f(x)$ to $y = f(x - 2)$.

Translation of 2 units right

Describe the transformation from $y = f(x)$ to $y = f(-x)$.

Reflection in the y-axis

Solutions – Graph Transformations (J)

Describe the transformation from $y = f(x)$ to $y = f(2x)$.

Horizontal compression by a factor of 2

Describe the transformation from $y = f(x)$ to $y = f(x + 5)$.

Translation of 5 units left

Describe the transformation from $y = f(x)$ to $y = 3f(x) + 3$.

Vertical stretch by a factor of 3 then a translation of 3 units up

Describe the transformation from $y = f(x)$ to $y = f(-x + 2)$.

Reflection in the y-axis then a translation of 2 units right

Describe the transformation from $y = f(x)$ to $y = -f(x)$.

Reflection in the x-axis

Describe the transformation from $y = f(x)$ to $y = -f(x - 5)$.

Translation of 5 units right then a reflection in the x-axis