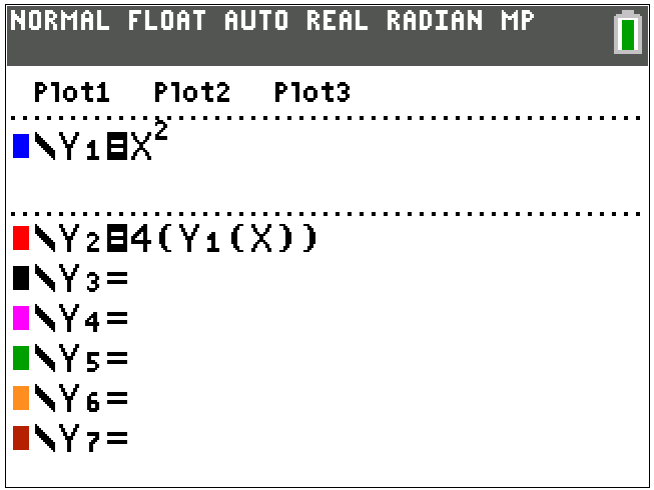
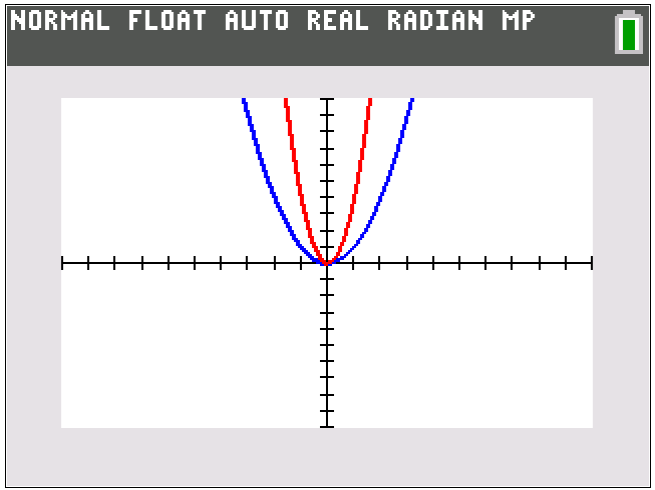
Problem 01

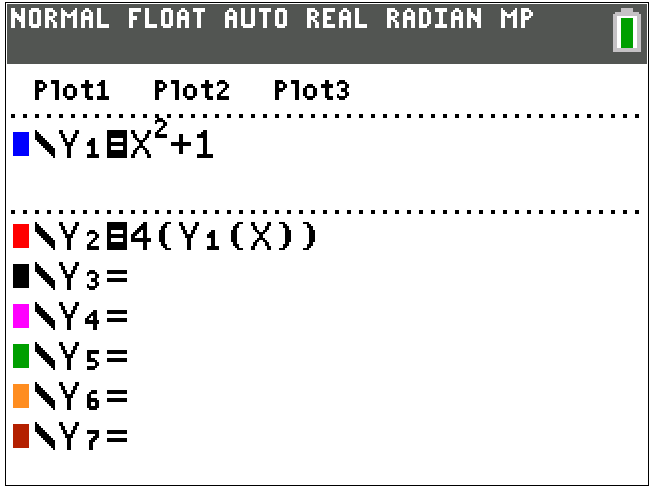


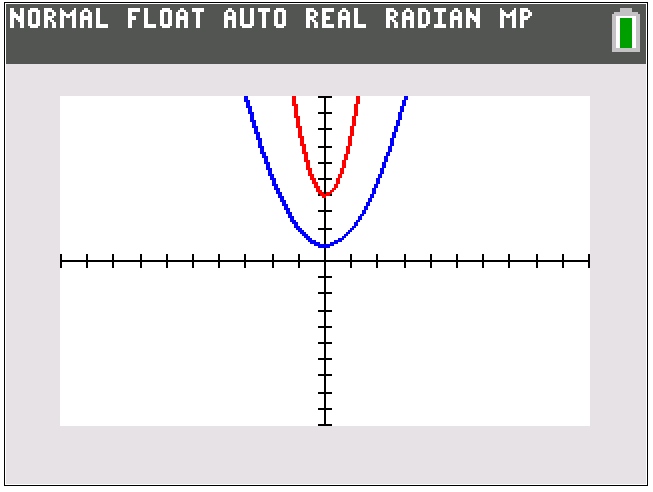



```
WINDOW
Xmin = -10
Xmax = 10
Xscl = 1
Ymin = -10
Ymax = 10
Yscl = 1
```

How would you describe the transformation? Is this a vertical stretch or a horizontal compression?

Problem 02

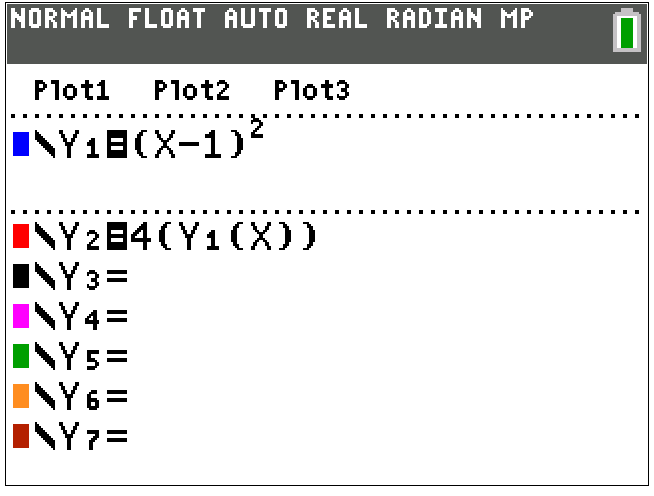


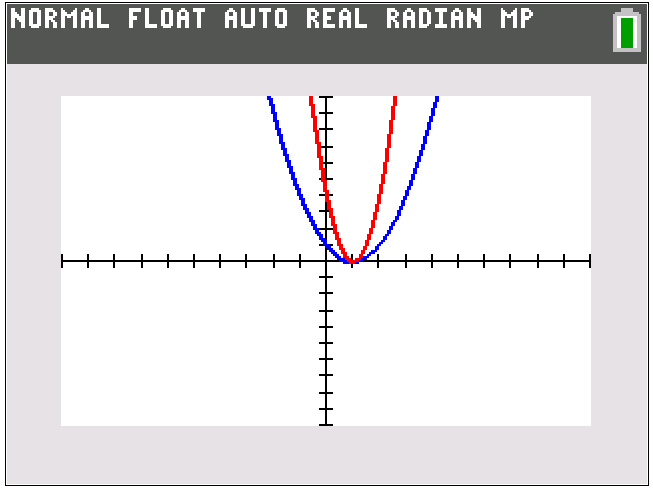



```
WINDOW
Xmin = -10
Xmax = 10
Xscl = 1
Ymin = -10
Ymax = 10
Yscl = 1
```

How would you describe the transformation? Is this a vertical stretch or a horizontal compression? How can you tell?

Problem 03

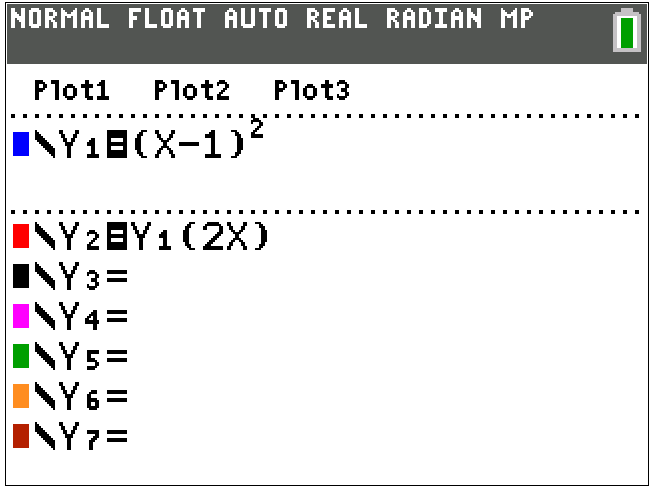


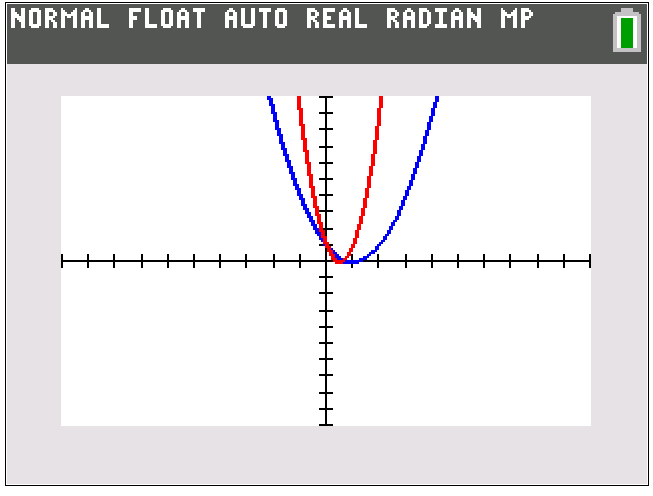



```
WINDOW
Xmin = -10
Xmax = 10
Xscl = 1
Ymin = -10
Ymax = 10
Yscl = 1
```

How do you know this is a vertical stretch and not a horizontal compression?

Problem 04

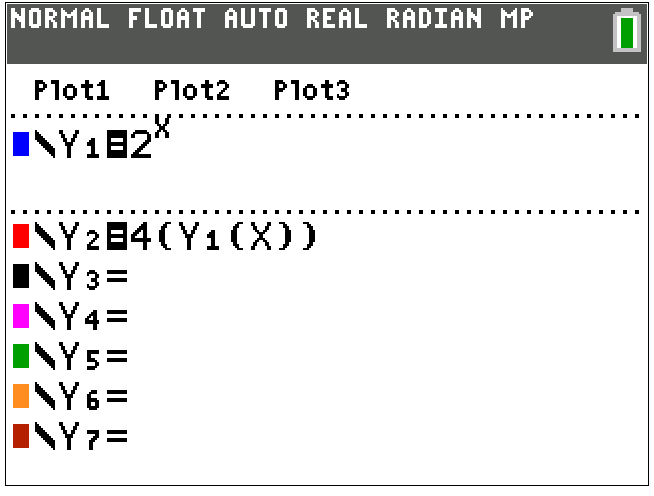


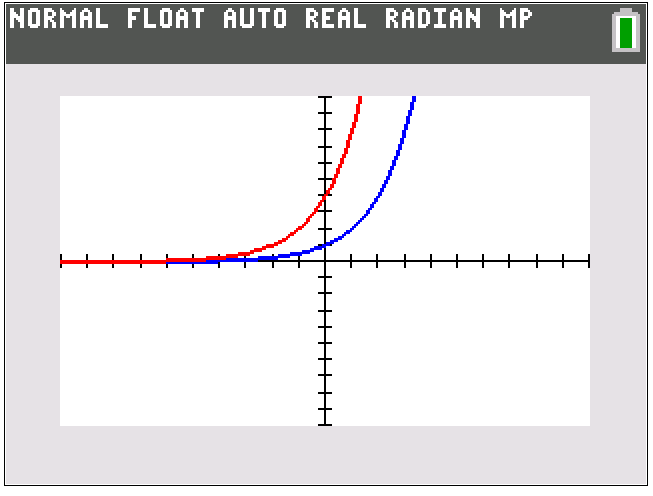



```
WINDOW
Xmin = -10
Xmax = 10
Xscl = 1
Ymin = -10
Ymax = 10
Yscl = 1
```

How do you know this a horizontal compression and not a vertical stretch?

Problem 05

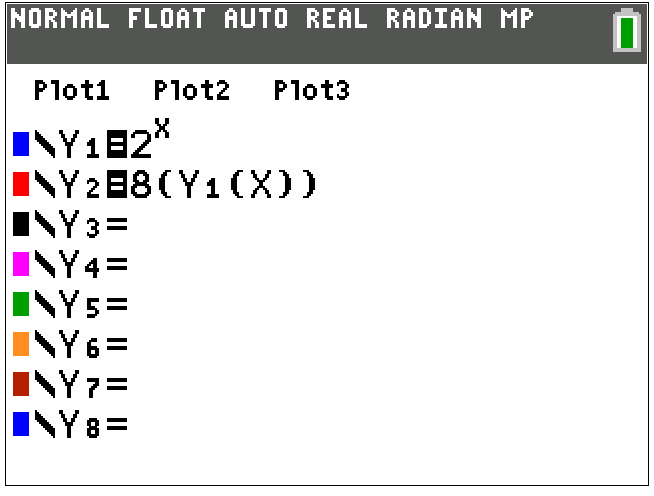


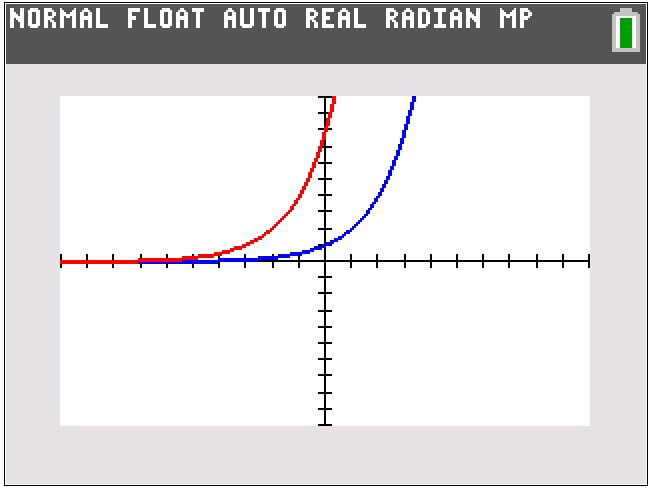



```
WINDOW
Xmin = -10
Xmax = 10
Xscl = 1
Ymin = -10
Ymax = 10
Yscl = 1
```

How would you describe the transformation? Is this a vertical stretch by a factor for 4 or a horizontal shift of 2 units to the left?

Problem 06

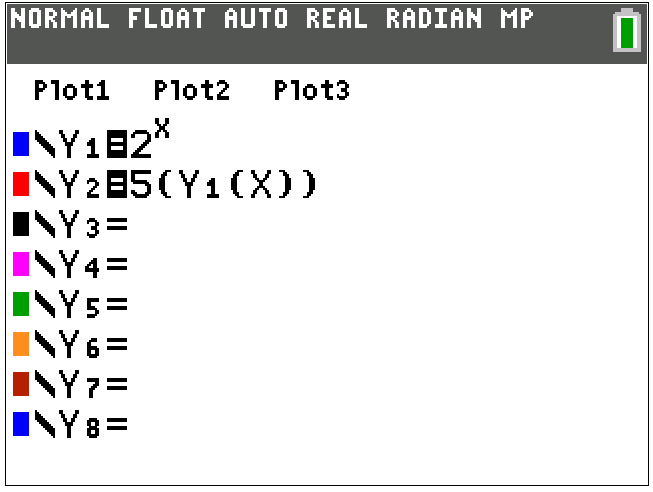


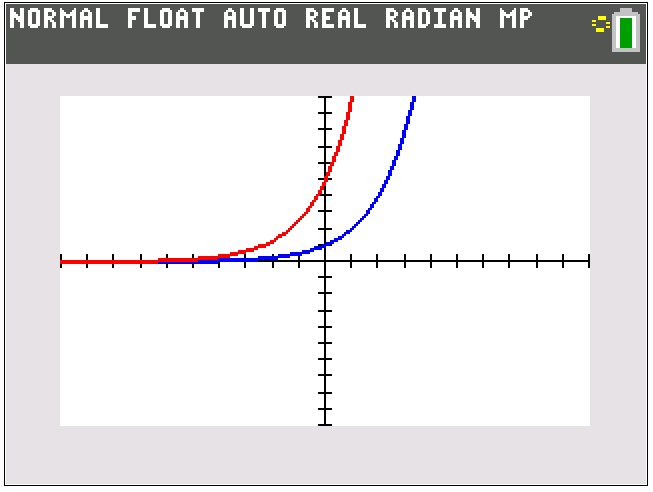



```
WINDOW
Xmin = -10
Xmax = 10
Xscl = 1
Ymin = -10
Ymax = 10
Yscl = 1
```

How would you describe the transformation? Is this a vertical stretch by a factor for 8 or a horizontal shift of 3 units to the left?

Problem 07

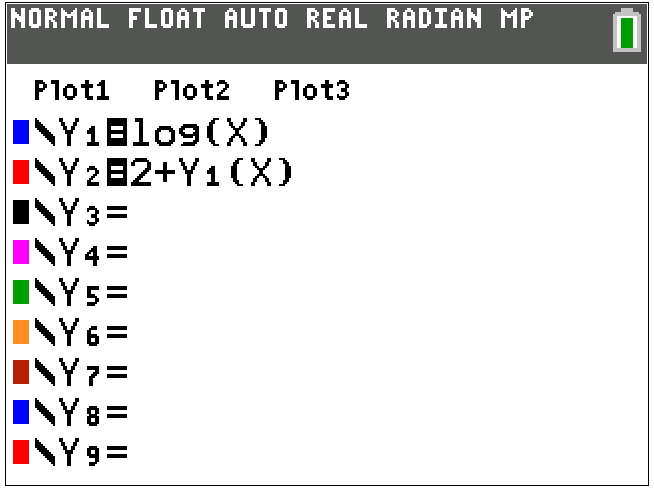


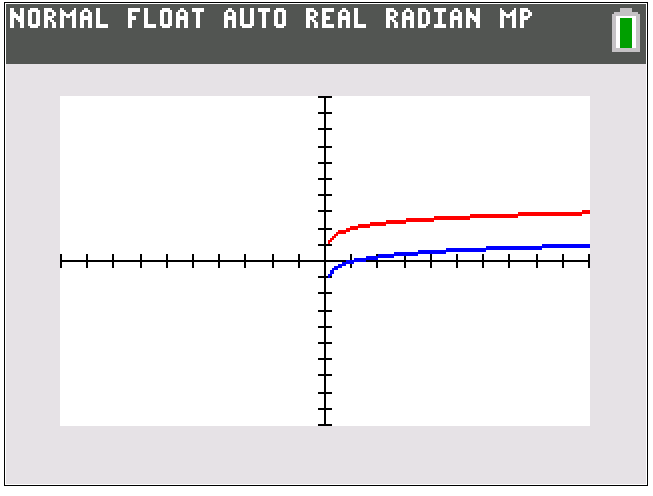



```
WINDOW
Xmin = -10
Xmax = 10
Xscl = 1
Ymin = -10
Ymax = 10
Yscl = 1
```

This a vertical stretch by a factor of 5 and also a horizontal shift of _____ units to the left.

Problem 08

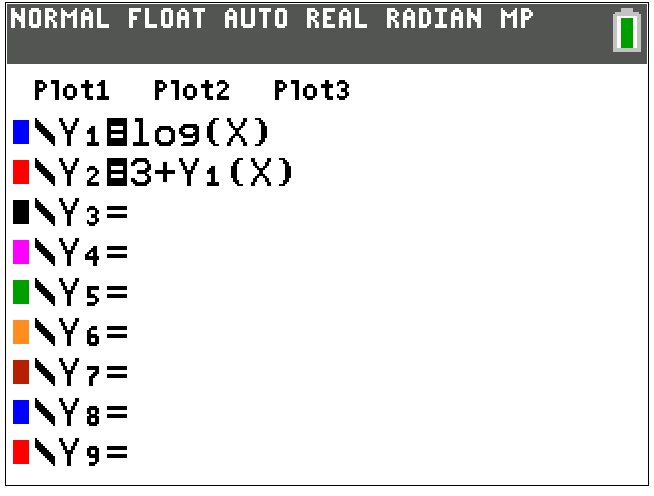


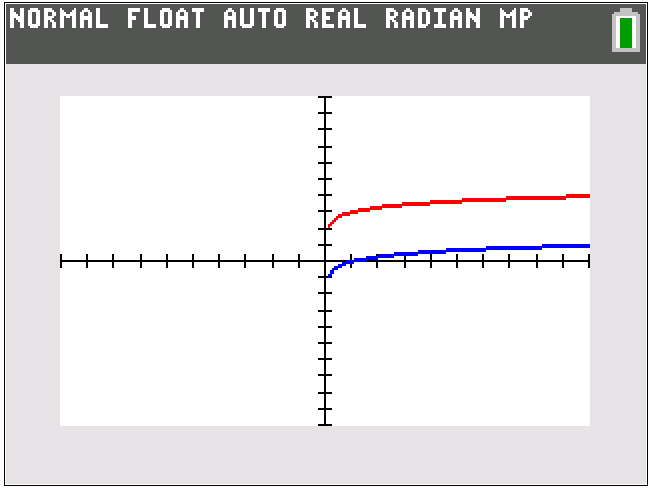



```
WINDOW
Xmin = -10
Xmax = 10
Xscl = 1
Ymin = -10
Ymax = 10
Yscl = 1
```

How would you describe the transformation? Is this a vertical shift of 2 units up or a horizontal compression by a factor for 100?

Problem 09

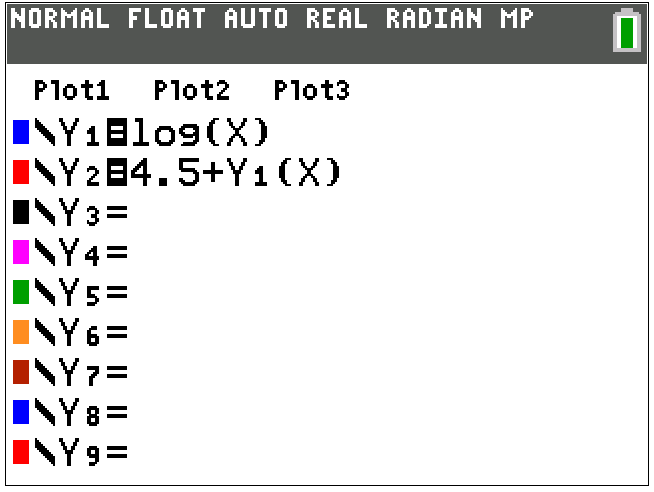


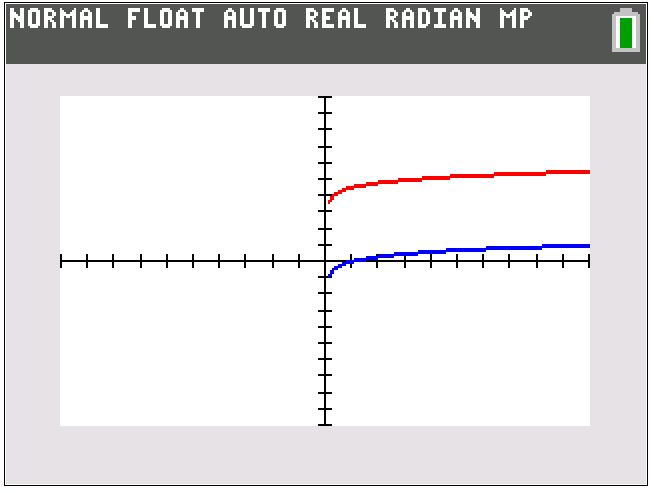



```
WINDOW
Xmin = -10
Xmax = 10
Xscl = 1
Ymin = -10
Ymax = 10
Yscl = 1
```

How would you describe the transformation? Is this a vertical shift of 3 units up or a horizontal compression by a factor for 1000?

Problem 10



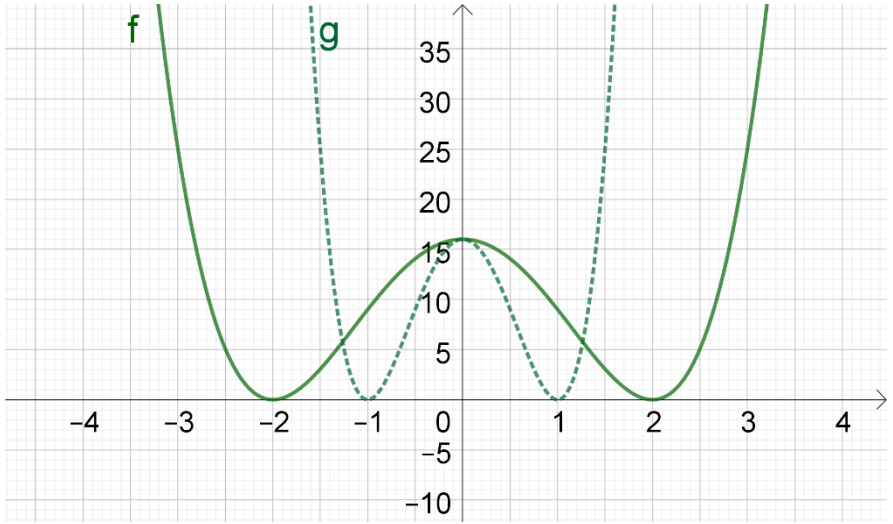



```
WINDOW
Xmin = -10
Xmax = 10
Xscl = 1
Ymin = -10
Ymax = 10
Yscl = 1
```

This is a vertical translation of 4.5 units up and also a horizontal compression by a factor of _____ .

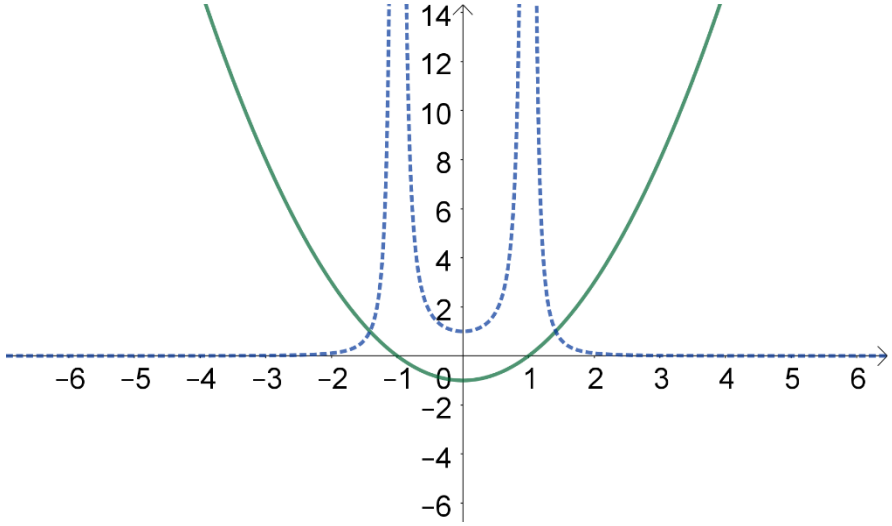
Problem 11

The function $y = f(x)$ is graphed using a solid line. The function $g(x) = f(ax)$, for some real number a, is graphed using a dotted line. Approximate the value of a.



Problem 12

In the figure the solid curve represents $y_1 = x^2 - a$ and the dotted curve represents $y_2 = (y_1)^b$, for some integers a and b. Moreover, y_2 has two vertical asymptotes that pass through the x-intercepts of y_1. If the distance between the y-intercepts of y_1 and y_2 is 2 and if $b > -3$, find the values of a and b.



Answers:
Problem 01
Both are true
Problem 02
Vertical stretch by a factor of 4 because the *y*-intercept changes
Problem 03
Vertical stretch by a factor of 4 because the *x*-intercept doesn't change.
Problem 04
This is a horizontal compression by a factor of 4 because the *y*-intercept doesn't change and *x*-intercept does change.
Problem 05
Both are true
Problem 06
Both are true
Problem 07
$\frac{\ln 5}{\ln 2}$
Problem 08
Both are true
Problem 09
Both are true
Problem 10
$10^{4.5} = \left(\sqrt{10}\right)^9$
Problem 11
$a = 2$
Problem 12
$a = 1$, and $b = -2$