Sketching Graphs Using Transformations

Answers

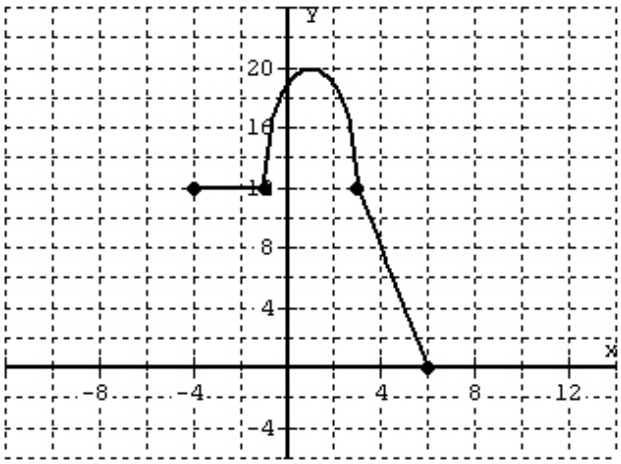
1. Several different answers are possible. One is
   i) Stretch the graph vertically by 3, this gives $y = 3|x|$
   ii) Shift horizontally 1 unit to the left. This gives $y = 3|x + 1|$
   iii) Now reflect the graph across the y-axis. This gives $y = 3|-x + 1|$

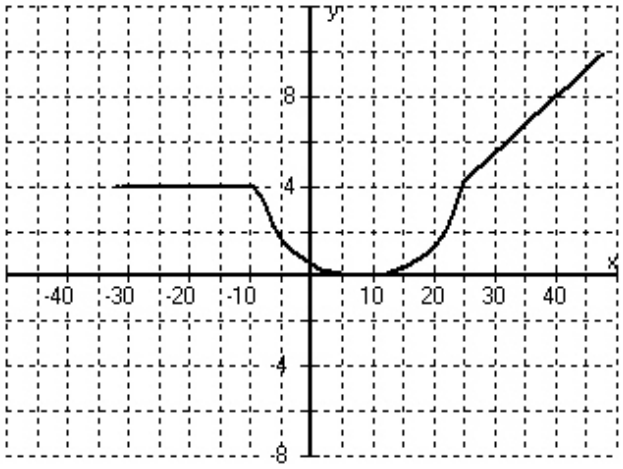
2. Several different answers are possible. One is
   i) Stretch the graph vertically by 2, this gives $y = 2/x$
   ii) Shift vertically 4 units up to get $y = 4 + 2/x$
   iii) Shift horizontally 16 units to the left to get
   $y = 4 + 2/(x + 16)$

3. The sequence of transformations takes $y = 2^x$ and produces $y = 2^x - 4$, then $y = 3(2^x - 4)$, and finally $y = -3(2^x - 4)$.

4. The sequence of transformations takes $y = \ln(x) + |x|$ and produces $y = \ln(x - 1) + |x - 1|$, then $y = -\ln(x - 1) - |x - 1|$, then $y = \frac{-\ln(x-1)-|x-1|}{2}$, and finally $y = \frac{-\ln(x-1)-|x-1|}{2} - 5$

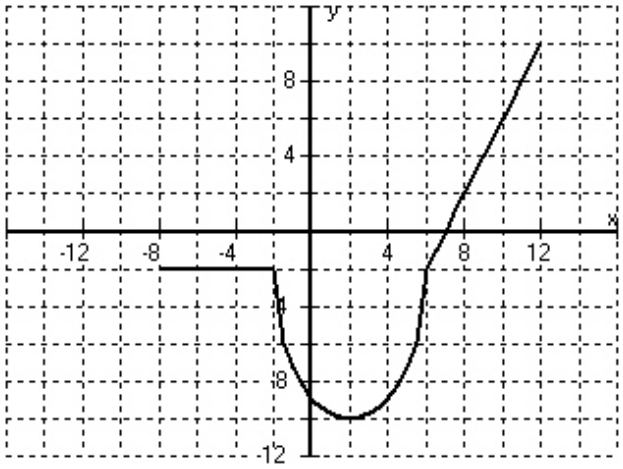
5. $y = 2f(2x) + 4$





6. $y = 8 - f(x/4)$

7. $y = f(2 - x)$



8. $y = 6 - 2f(x)$